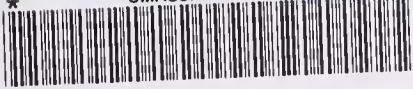


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THE STATE ANNUAL FORECAST OF ENERGY RESOURCES 1988 - 2000 DEMAND UPDATE

Michael S. Dukakis
Governor
Commonwealth of Massachusetts

Sharon M. Pollard
Secretary of
Energy Resources

1988

1989

1990

1991

1992

1993

1994

1995

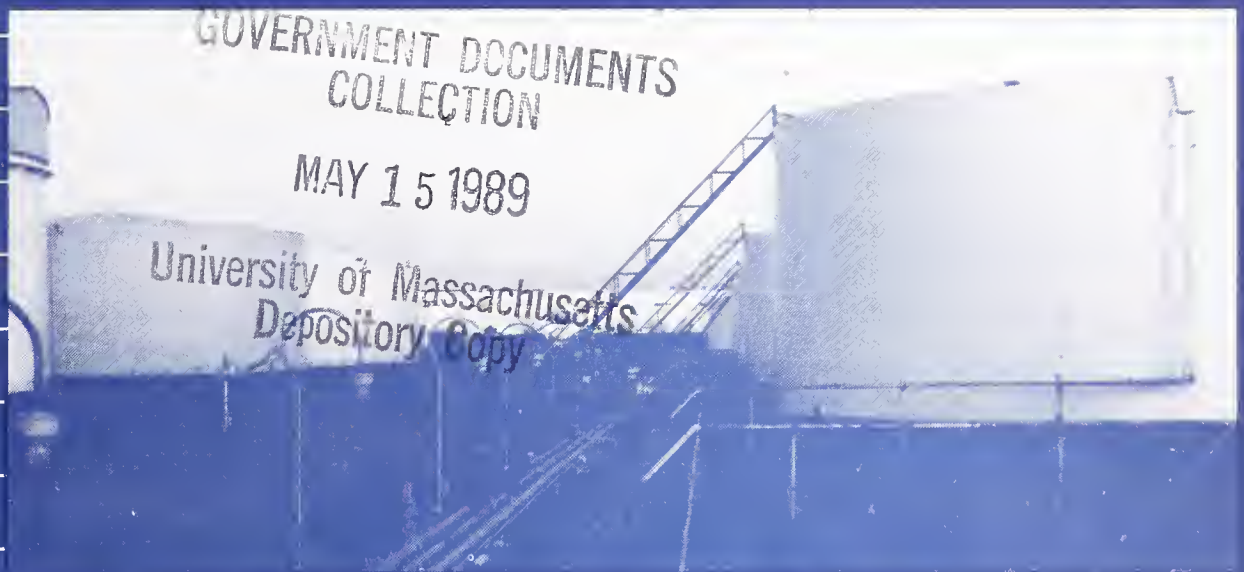
1996

1997

1998

1999

2000



STATE ANNUAL FORECAST OF ENERGY RESOURCES 1988 - 2000
DEMAND UPDATE

DECEMBER 1988

THE EXECUTIVE OFFICE OF ENERGY RESOURCES
COMMONWEALTH OF MASSACHUSETTS

MICHAEL S. DUKAKIS
Governor

SHARON M. POLLARD
Secretary



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I. INTRODUCTION AND SUMMARY

Over the last three years, EOER has developed an in-house energy forecasting capability as part of its State Annual Forecast of Energy Resources (SAFER) project. A summary of EOER's most recent forecast, along with a description of its key underlying assumptions and contingencies which may affect it, is included in this introduction. A more detailed update of EOER's demand forecast can be found in the tables which follow. These tables are updated versions of the ones which appear in EOER's report, *State Annual Forecast of Energy Resources 1987-1997: Fueling the Future*.

A. UNCERTAINTIES IN FORECASTING

All forecasting is subject to uncertainties and energy forecasting particularly so because it relies on forecasts of so many other factors. Energy is not generally demanded for itself but for what it can produce. People want lit offices, hot water, heated homes and to travel from one place to another; they do not want electricity, natural gas, oil, coal or gasoline per se. Therefore, energy demand is often referred to as a "derived demand" meaning that it is driven by the level of activity in the economy and how energy is used (the choice of fuels, processes and equipment) to fuel this activity. Consequently, forecasts of economic activity and fuel prices, and information on the efficiency of the processes and equipment in which energy is used are needed to generate an energy demand forecast.

Errors in any and all of these factors can be compounded in developing an energy forecast, leading to either too high or too low estimates of what future energy demand will be. Should economic growth increase at a rate faster than projected, energy demand could be expected to increase more quickly also. However, at the same time, opportunities for energy efficiency investments and conservation will also be increasing thereby slowing the rate of increase in energy demand. If new, more expensive, energy supplies have to be tapped to meet an increased level of demand, the price effect of these new supplies may offset some of the energy demand increase. Therefore, all of these factors must be considered together when analyzing the implications of any one of them occurring.

Other factors can also effect future energy demand and supply. Changes can occur in the context in which energy planning and resource development take place. New environmental controls may be required by federal or state regulatory agencies to mitigate air, water and hazardous waste pollution, and protect public health and safety. New technologies for saving or generating energy may be developed which significantly affect the cost or comparative cost of existing energy demand- and supply-side options. Substitutes for some fuels may be discovered which again will affect the cost of, and therefore the choices made with respect to, some energy sources.

B. TWO FORECAST SCENARIOS

To address the possibility and implications of these uncertainties and contingency events, EOER has developed two forecasts: a base case forecast and a contingency forecast. EOER believes that its base case forecast is the more probable of the two. It is based on EOER's base case economic forecast, base case fossil fuel price forecast, and includes the impacts of the new Massachusetts' and national appliance efficiency standards (including the amendment affecting lighting), and the new Massachusetts building code.

In the contingency case forecast, EOER analyzed the impacts of a high demand scenario. While EOER does not view the occurrence of this scenario as the most likely, it is one whose implications for the adequacy of Massachusetts' energy supplies must be addressed. It is based on EOER's high economic forecast.

A "high demand" (or "low supply") scenario could result from any of a number of combinations of events. For example, a higher than anticipated rate of economic growth accompanied by lower than anticipated fuel prices could lead to higher than anticipated energy consumption. High economic growth accompanied by high fuel prices, which cause some planned non-utility generation to be abandoned, could also lead to more energy demand than planned supplies can meet. Lower than anticipated rates of economic growth accompanied by high fuel prices and interest rates which cause utilities and non-utility generators to abandon projects might also result in a scenario where energy demand would exceed projected supply.

A scenario could also occur where all of the forecast assumptions held true, but contingency events, such as a delay in the siting and construction of new natural gas pipeline capacity into Massachusetts or a change in environmental regulations necessitating the retirement of some existing fossil fuel generation, occurred causing energy supplies to be less than projected. The implications of this "low supply" scenario would be similar to the ones associated with a "high demand" scenario. EOER has accounted for the overall impacts of these combination of events by creating one contingency "high demand" case.

C. FORECAST INPUT ASSUMPTIONS

1. Economic Forecast

EOER uses output from its own economic forecasting model and information from other agencies of the Commonwealth doing economic forecasting as inputs to its energy forecast. For this 1988 SAFER Demand Update, EOER has developed two economic scenarios corresponding to the base and high demand energy forecasts.

In the **base case**, real gross state product is projected to increase at an average annual rate of 3.3 percent between 1987 and 2000, given an average inflation rate of 3.7 percent. By sector, growth rates are as follows. Residential sector growth (represented as personal income), at an average annual rate of 3.4 percent, remains high reflecting two factors: an increase in population and a tight labor market. Commercial and industrial sector growth are also expected to

remain strong. The commercial sector (real dollar output) is projected to grow at an average annual rate of 3.0 percent, and the industrial sector (real dollar output) at an average annual rate of 3.5 percent. (See Tables 1, 3 and 5.)

In the high demand case, gross state product is projected to grow at an average annual rate of 4.6 percent, again with inflation at an average rate of 3.7 percent per year. Residential sector growth is projected to be 4.8 percent annually, commercial sector growth 4.4 percent annually, and industrial sector growth 4.9 percent annually. EOER does not believe that these growth rates are the most likely, however their implications for energy demand and supply should be considered. (See Tables 2, 4 and 6.)

2. Fossil Fuel Price Forecast

EOER's fossil fuel price forecast is based on the United States Department of Energy's (DOE) Spring 1988 long-term fossil fuel price forecast, adjusted to reflect additional available short-term information. The natural gas numbers also reflect Massachusetts-specific factors. The resulting exogenous fossil fuel price forecast was used in both the base and high demand cases.

Briefly, oil and gas prices are expected to increase at similar rates: oil at an average annual rate of 8.8 percent and natural gas at a rate of 8.1 percent. Gas prices per BTU are expected to remain below oil prices, however. Coal prices are expected to increase much more slowly at an average annual rate of only 2.4 percent. (See Table 7.)

3. Process and Equipment Efficiencies

EOER has included the impacts of three sets of codes and standards in both the base and high demand energy forecasts: 1) Massachusetts' appliance efficiency standards; 2) national appliance efficiency standards; and 3) Massachusetts' new residential and commercial building code standards.

a. Massachusetts' Appliance Efficiency Standards

The impacts of Massachusetts' appliance efficiency standards have been included in EOER's energy forecast. These standards set minimum efficiency requirements for refrigerators, freezers, water heaters, showerheads, fluorescent lamp ballasts and fluorescent lamp fixtures sold, installed or offered for sale in the Commonwealth on or after January 1, 1988. The law enacting the standards was amended on June 28, 1988 to include minimum efficiency standards for incandescent, reflector incandescent, tungsten halogen, and fluorescent lamp fixtures sold for commercial or industrial use after January 1, 1990. EOER has also modeled the impacts of this amendment to the standards.

b. National Appliance Efficiency Standards

The impacts of national appliance efficiency standards have also been included in EOER's energy forecast. The federal bill establishing these standards, which take effect in two phases, was signed into law on March 17, 1987. National standards for some of the appliances covered by the Massachusetts law -- refrigerators, freezers and water heaters -- will take effect in 1990. The national requirements are

slightly more stringent than the Massachusetts standards and will supersede them. National standards for appliances not covered by the Massachusetts law -- heat pumps, furnaces, boilers and central air conditioners -- will take effect in 1992.

c. Massachusetts Residential and Commercial Building Codes

EOER has also included the impacts of recent revisions to the Massachusetts residential and commercial building codes in its energy forecast. These new building standards took effect on July 1, 1988.

In the commercial sector (including high-rise residential construction), the most significant changes to the old building code were in the requirements affecting thermal envelope (i.e., building insulation and window and door efficiency levels) and lighting. The new thermal standards recognize the dominance of cooling loads in commercial buildings, even in New England's climate, and the desirability of constructing buildings to minimize their air conditioning requirements. They also recognize that lighting is the largest energy end-use in the commercial sector and set stringent, yet flexible, standards that allow for the use of more lighting or less efficient individual lighting fixtures if automatic controls (e.g., daylighting or occupancy sensors) to turn lights off and on are installed.

The new residential standards require higher levels of wall, foundation, basement and ceiling insulation and more efficient doors and windows than the old standards. They

also distinguish between electrically-heated (resistance heat) homes and homes heated by oil, gas or heat pumps, requiring still higher levels of insulation and efficiency for electrically-heated homes. These higher standards for homes heated by resistance heat are cost-effective and warranted due to the higher costs of heating with electric resistance heat.

4. Supply Assumptions

EOER has also made a number of assumptions on the supply side in developing its energy forecast. These assumptions have been made primarily for modeling purposes and do not reflect, except where noted, any formal policy positions of the Commonwealth.

a. Natural Gas

Currently, the following additions to natural gas pipeline capacity have been assumed in the SAFER model:

Champlain	204.5 MMcf/day	1993-1997
	304.5 "	1998-2000
Algonquin	90.0 "	starting in 1991
PennEast CDS	29.4 "	" " 1991
Tenn NOREX	69.0 "	" " 1990

All of these projects are part of the Federal Energy Regulatory Commission's "open season" proceeding. Some have been designated as discrete while others may be part of a settlement proposal.

b. Electricity

Seabrook: EOER has assumed that the Seabrook nuclear power plant would be cancelled in 1989 and cost recovery would begin in 1990 with the utilities being allowed recovery of and on fifty percent of their expenditures,

and with the portion of investment not allowed taken as a reduction in utility taxes.

Pilgrim: For forecasting purposes only, EOER has assumed that the Pilgrim nuclear power plant would return to service by mid-1989. As this document goes to press, Boston Edison Company has not received permission to restart Pilgrim from the Nuclear Regulatory Commission. In addition, the Federal Emergency Management Agency has withdrawn its interim approval of Pilgrim's evacuation plan. A new plan is under development but its adequacy has not yet been ascertained. These circumstances make the mid-1989 availability estimate subject to great uncertainty. The Commonwealth remains opposed to Pilgrim's restart until these outstanding issues are resolved.

Utility Conservation and Load Management:

EOER has assumed that utility conservation and load management programs will produce the savings that the utilities' have reported to the New England Power Pool, a voluntary association of New England's electric utilities, which conducts some central planning functions. The utilities have projected that demand-side management programs will save over 900 megawatts of electricity capacity by 2000. (See Table 61.)

Energy Supply Resources: EOER has assumed that utility (other than Seabrook and Pilgrim) and non-utility generation, including power plants and major transmission lines, now under construction, licensed, contracted for, or in the planning stages would come on line as scheduled.

D. FORECAST SUMMARIES

A comparison of the earlier forecast with this Demand Update shows that EOER is now projecting slightly more growth overall in energy consumption. This is driven by two factors. First, a new economic forecast has been used for this Demand Update. It projects higher levels of economic activity than the earlier forecast and includes recently revised figures for actual levels of economic activity historically. Second, in this Demand Update, EOER has modeled the impacts of different energy policies.

In the earlier forecast, EOER had included the impacts of mandatory time-of-use rates for the commercial and industrial sectors, and slightly different estimates of the impacts of the new Massachusetts residential building code. In this forecast, EOER has instead included the utilities' estimates of their demand-side management programs, and more accurate estimates of the impacts of the new residential code.

In addition, recent events in the gas industry which should lead to the availability of substantial amounts of new natural gas supplies have been reflected in this forecast along with new information on both utility and non-utility generation.

Brief summaries of the results of EOER's base and high demand forecasts, with and without utility demand-side management impacts, can be found on the next four pages. More detailed output from the two forecasts can be found in the next section.

BASE CASE WITHOUT DEMAND-SIDE MANAGEMENT

ECONOMIC FORECAST

Average Annual Growth Rate
(1987 - 2000)

Gross State Product (1975\$)	3.3%
Inflation	3.7
Residential Sector (Income)	3.4
Commercial Sector (Output)	3.0
Industrial Sector (Output)	3.5

TOTAL ENERGY CONSUMPTION BY SECTOR AND FUEL

	Average Annual Growth Rate (1987 - 2000)				
	<u>Total</u>	<u>Oil</u>	<u>Gas</u>	<u>Coal</u>	<u>Electricity</u>
Residential	1.66%	0.05%	4.11%	-2.88%	2.20%
Commercial	1.27	-0.27	2.39	-3.85	2.55
Industrial	0.00	-1.05	1.19	1.90	2.23
Transportation	2.22	2.21	0.00	0.00	7.96
Electric Utility	2.35*	-1.97	20.13	0.94	0.00

* Includes fossil fuel, nuclear, hydro and cogeneration, small and independent power.

UTILITY STATISTICS

Average Annual Growth Rate
(1987-2000)

	<u>Electric</u>	<u>Gas</u>
Sales	2.3%	5.5%
Peak Demand	2.6	4.4

SMALL POWER AND COGENERATION CAPACITY (Adjusted)

1988	350.9 MW
2000	1946.9 MW

NEW ELECTRIC UTILITY CAPACITY NEEDS*

	<u>1991</u>	<u>1992</u>	<u>1993</u>	<u>1994</u>	<u>1995</u>	<u>1996</u>	<u>1997</u>	<u>1998</u>	<u>1999</u>	<u>2000</u>	<u>Total</u>
MW											
Initiat.	100	100	200	200	200	400	300	300	300	300	2100
MW											
On-Line					100	100	200	200	200	400	1200

* Includes 200 MW of plants proposed by Commonwealth Electric (1995 and 2000 on-line). Assumes Hydro Quebec II purchase extends beyond 2000.

BASE CASE WITH DEMAND-SIDE MANAGEMENT

ECONOMIC FORECAST

Average Annual Growth Rate
(1987 - 2000)

Gross State Product (1975\$)	3.3%
Inflation	3.7
Residential Sector (Income)	3.4
Commercial Sector (Output)	3.0
Industrial Sector (Output)	3.5

TOTAL ENERGY CONSUMPTION BY SECTOR AND FUEL

	Average Annual Growth Rate (1987 - 2000)				
	<u>Total</u>	<u>Oil</u>	<u>Gas</u>	<u>Coal</u>	<u>Electricity</u>
Residential	1.66%	0.05%	4.11%	-2.88%	2.20%
Commercial	1.27	-0.27	2.39	-3.85	2.55
Industrial	0.00	-1.05	1.19	1.90	2.23
Transportation	2.22	2.21	0.00	0.00	7.96
Electric Utility	2.01*	-2.53	18.58	0.94	0.00

* Includes fossil fuel, nuclear, hydro and cogeneration, small and independent power.

UTILITY STATISTICS

Average Annual Growth Rate
(1987-2000)

	<u>Electric</u>	<u>Gas</u>
Sales	2.3%*	5.7%
Peak Demand	1.9	4.4

* No change from without DSM case because DSM treated as generation. See Table 61 for energy sales impacts.

SMALL POWER AND COGENERATION CAPACITY (Adjusted)

1988	350.9 MW
2000	1946.9 MW

NEW ELECTRIC UTILITY CAPACITY NEEDS*

	<u>1991</u>	<u>1992</u>	<u>1993</u>	<u>1994</u>	<u>1995</u>	<u>1996</u>	<u>1997</u>	<u>1998</u>	<u>1999</u>	<u>2000</u>	<u>Total</u>
MW											
Initiat. 100						100	300	100	300	100	1000
MW											
On-Line					100					100	200

* Includes 200 MW of plants proposed by Commonwealth Electric (1995 and 2000 on-line). Assumes Hydro Quebec II purchase extends beyond 2000.

HIGH CASE WITHOUT DEMAND-SIDE MANAGEMENT

ECONOMIC FORECAST

Average Annual Growth Rate
(1987 - 2000)

Gross State Product (1975\$)	4.6%
Inflation	3.7
Residential Sector (Income)	4.8
Commercial Sector (Output)	4.4
Industrial Sector (Output)	4.9

TOTAL ENERGY CONSUMPTION BY SECTOR AND FUEL

	Average Annual Growth Rate (1987 - 2000)				
	<u>Total</u>	<u>Oil</u>	<u>Gas</u>	<u>Coal</u>	<u>Electricity</u>
Residential	2.81%	0.86%	5.51%	-2.88%	3.22%
Commercial	2.28	0.56	3.58	-3.85	3.64
Industrial	0.86	-0.33	2.28	3.06	3.35
Transportation	3.40	3.38	0.00	0.00	9.28
Electric Utility	3.23*	-0.73	23.81	1.25	0.00

* Includes fossil fuel, nuclear, hydro and cogeneration, small and independent power.

UTILITY STATISTICS

Average Annual Growth Rate
(1987-2000)

	<u>Electric</u>	<u>Gas</u>
Sales	3.3%	7.1%
Peak Demand	3.6	5.7

SMALL POWER AND COGENERATION CAPACITY (Adjusted)

1988	350.9 MW
2000	1946.9 MW

NEW ELECTRIC UTILITY CAPACITY NEEDS*

	<u>1991</u>	<u>1992</u>	<u>1993</u>	<u>1994</u>	<u>1995</u>	<u>1996</u>	<u>1997</u>	<u>1998</u>	<u>1999</u>	<u>2000</u>	<u>Total</u>
MW											
Initiat.	200	400	300	400	400	500	500	400	400	500	4000
MW											
On-Line					200	400	300	400	400	500	2200

* Includes 200 MW of plants proposed by Commonwealth Electric (1995 and 2000 on-line). Assumes Hydro Quebec II purchase extends beyond 2000.

HIGH CASE WITH DEMAND-SIDE MANAGEMENT

ECONOMIC FORECAST

Average Annual Growth Rate
(1987 - 2000)

Gross State Product (1975\$)	4.6%
Inflation	3.7
Residential Sector (Income)	4.8
Commercial Sector (Output)	4.4
Industrial Sector (Output)	4.9

TOTAL ENERGY CONSUMPTION BY SECTOR AND FUEL

	Average Annual Growth Rate (1987 - 2000)				
	<u>Total</u>	<u>Oil</u>	<u>Gas</u>	<u>Coal</u>	<u>Electricity</u>
Residential	2.80%	0.86%	5.51%	-2.88%	3.22%
Commercial	2.27	0.56	3.58	-3.85	3.64
Industrial	0.86	-0.33	2.28	3.06	3.35
Transportation	3.39	3.38	0.00	0.00	9.28
Electric Utility	2.87*	-1.31	22.20	1.26	0.00

* Includes fossil fuel, nuclear, hydro and cogeneration, small and independent power.

UTILITY STATISTICS

Average Annual Growth Rate
(1987-2000)

	<u>Electric</u>	<u>Gas</u>
Sales	3.3%*	7.1%
Peak Demand	2.9	5.7

* No change from without DSM case because DSM treated as generation. See Table 61 for energy sales impacts.

SMALL POWER AND COGENERATION CAPACITY (Adjusted)

1988	350.9 MW
2000	1946.9 MW

NEW ELECTRIC UTILITY CAPACITY NEEDS*

	<u>1991</u>	<u>1992</u>	<u>1993</u>	<u>1994</u>	<u>1995</u>	<u>1996</u>	<u>1997</u>	<u>1998</u>	<u>1999</u>	<u>2000</u>	<u>Total</u>
MW											
Initiat. 100				300	300	500	400	300	400	300	2600
MW											
On-Line					100			300	300	500	1200

* Includes 200 MW of plants proposed by Commonwealth Electric (1995 and 2000 on-line). Assumes Hydro Quebec II purchase extends beyond 2000.

DEMAND UPDATE

II. DEMAND UPDATE

For this Demand Update, EOER has prepared tables for base case and high demand case. These tables are interleaved in each of the following sections, with the high demand case table following the base case table for each.

The tables which follow are updated versions of the ones which appear in EOER's 1987 report, *State Annual Forecast of Energy Resources 1987-1997: Fueling the Future*. The number of the 1987 report table to which each table corresponds appears in parentheses (e.g., formerly Table 44), at the top of each table. In some cases, the 1988 tables are expanded versions of the 1987 tables or new tables which did not appear in the earlier report.

Exogenous Inputs

(formerly Table 44)

TABLE 1
Base Case
MASSACHUSETTS
ECONOMIC GROWTH
1987-2000

	Gross State Product (Millions of Current \$)	Gross State Product (Millions of 1975\$)	Real Annual Growth Rate (%)	Annual Inflation Rate (%)
1987	133,472	65,921	3.97	4.86
1988	142,719	67,556	2.48	4.34
1989	152,451	69,256	2.52	4.20
1990	163,655	71,525	3.28	3.94
1991	172,842	73,688	3.02	2.51
1992	182,386	75,413	2.34	3.11
1993	193,113	77,749	3.10	2.70
1994	202,975	79,397	2.12	2.93
1995	216,356	82,017	3.30	3.19
1996	226,894	83,238	1.49	3.33
1997	242,590	85,785	3.06	3.74
1998	260,327	88,775	3.49	3.70
1999	277,919	91,427	2.99	3.66
2000	305,020	94,377	3.23	6.32
Average Annual Growth Rate 1987-2000	9.9%	3.3%		
Compound Annual Growth Rate 1987-2000	6.4%	2.8%		

Source: SAFER Model

(formerly Table 44)

TABLE 2
High Demand Case
MASSACHUSETTS
ECONOMIC GROWTH
1987-2000

	Gross State Product (Millions of Current \$)	Gross State Product (Millions of 1975\$)	Real Annual Growth Rate (%)	Annual Inflation Rate (%)
1987	133,472	65,921	3.97	4.86
1988	142,719	67,556	2.48	4.34
1989	153,978	69,949	3.54	4.20
1990	166,893	72,940	4.28	3.94
1991	177,964	75,872	4.02	2.51
1992	189,597	78,395	3.33	3.11
1993	202,663	81,594	4.08	2.70
1994	215,037	84,115	3.09	2.93
1995	231,379	87,712	4.28	3.19
1996	244,943	89,859	2.45	3.33
1997	264,354	93,481	4.03	3.74
1998	286,318	97,638	4.45	3.70
1999	308,496	101,485	3.94	3.66
2000	341,709	105,728	4.18	6.32
Average Annual Growth Rate 1987-2000	12.0%	4.6%		
Compound Annual Growth Rate 1987-2000	7.2%	3.6%		

Source: SAFER Model

(formerly Table 45)

TABLE 3
Base Case
INDUSTRIAL SECTOR
OUTPUT BY SIC CATEGORY
1987 AND 2000

<u>SIC</u>	<u>1987 Output</u> (Millions of 1975\$)	<u>2000 Output</u> (Millions of 1975\$)	<u>Average Annual Output Growth Rate</u> (%)
20	816	795	-0.2%
22	350	389	+0.9
23	380	339	-0.8
24	129	155	+1.6
25	160	194	+1.6
26	665	720	+0.6
27	1105	1393	+2.0
28	591	685	+1.2
29	80	120	+3.8
30	623	620	-0.0
31	172	92	-3.6
32	312	394	+2.0
33	413	506	+1.7
34	1101	1071	-0.2
35 ¹	6310	12,533	+7.6
36 ¹	3172	5208	+4.9
37	720	773	+0.6
38 ¹	1676	2237	+2.6
39 ¹	389	435	+0.9
Total Industry	19,163	28,679	+3.8

1. Category includes a large portion of high technology industries.

Source: SAFER Model

(formerly Table 45)

TABLE 4
High Demand Case
INDUSTRIAL SECTOR
OUTPUT BY SIC CATEGORY
1987 AND 2000

<u>SIC</u>	<u>1987 Output</u> (Millions of 1975\$)	<u>2000 Output</u> (Millions of 1975\$)	<u>Average Annual Output Growth Rate</u> (%)
20	816	893	+0.7%
22	350	437	+1.9
23	380	382	+0.0
24	129	174	+2.7
25	160	218	+2.8
26	665	808	+1.7
27	1105	1562	+3.2
28	591	769	+2.3
29	80	134	+5.2
30	623	697	+0.9
31	172	104	-3.0
32	312	442	+3.2
33	413	568	+2.9
34	1101	1204	+0.7
35 ¹	6310	14,022	+9.4
36 ¹	3172	5828	+6.4
37	720	868	+1.6
38 ¹	1676	2508	+3.8
39 ¹	389	489	+2.0
Total Industry	19,163	32,106	+5.2

1. Category includes a large portion of high technology industries.

Source: SAFER Model

(formerly Table 46)

TABLE 5
Base Case
RESIDENTIAL AND COMMERCIAL SECTOR
ECONOMIC GROWTH
1987-2000

	Residential (Personal Income) <u>(Millions of 1975\$)</u>	Real Ann. Growth Rate <u>(%)</u>	Commercial (Sector Output) <u>(Millions of 1975\$)</u>	Real Ann. Growth Rate <u>(%)</u>
1987	55,612	3.89	47,308	3.73
1988	58,103	4.48	48,409	2.33
1989	59,963	3.20	49,937	3.16
1990	61,497	2.56	51,323	2.77
1991	62,925	2.32	52,826	2.93
1992	64,151	1.95	53,895	2.02
1993	66,432	3.56	55,325	2.65
1994	67,604	1.76	56,307	1.77
1995	69,750	3.17	57,853	2.75
1996	71,619	2.68	59,482	2.82
1997	73,492	2.62	60,549	1.79
1998	76,426	3.99	62,284	2.87
1999	78,418	2.61	63,844	2.51
2000	80,572	2.75	66,193	3.68
Average Annual Growth Rate 1987-2000	3.5%		3.1%	
Compound Annual Growth Rate 1987-2000	2.8%		2.6%	

Source: SAFER Model

(formerly Table 46)

TABLE 6
High Demand Case
RESIDENTIAL AND COMMERCIAL SECTOR
ECONOMIC GROWTH
1987-2000

	Residential (Personal Income) (Millions of 1975\$)	Real Ann. Growth Rate (%)	Commercial (Sector Output) (Millions of 1975\$)	Real Ann. Growth Rate (%)
1987	55,612	3.89	47,308	3.73
1988	58,103	4.48	48,409	2.33
1989	60,567	4.24	50,436	4.19
1990	62,716	3.55	52,336	3.77
1991	64,799	3.32	54,391	3.93
1992	66,697	2.93	56,028	3.01
1993	69,725	4.54	58,066	3.64
1994	71,631	2.73	59,660	2.75
1995	74,597	4.14	61,881	3.72
1996	77,310	3.64	64,223	3.78
1997	80,074	3.58	65,991	2.75
1998	84,038	4.95	68,520	3.83
1999	87,034	3.56	70,892	3.46
2000	90,247	3.69	74,180	4.64
Average Annual Growth Rate 1987-2000	4.3%		4.4%	
Compound Annual Growth Rate 1987-2000	3.4%		3.5%	

Source: SAFER Model

(formerly Table 47)

TABLE 7
Base and High Demand Cases
NATIONAL AVERAGE
WELLHEAD AND MINE MOUTH FUEL PRICES
1987-2000
(1975\$/mmbtu)

	<u>Oil</u>	<u>Gas</u>	<u>Coal</u>
1987	1.38	0.81	0.61
1988	1.30	0.74	0.61
1989	1.41	0.81	0.61
1990	1.70	0.89	0.62
1991	1.91	0.97	0.63
1992	2.01	1.04	0.65
1993	2.12	1.12	0.66
1994	2.23	1.22	0.68
1995	2.35	1.36	0.69
1996	2.46	1.42	0.71
1997	2.57	1.48	0.74
1998	2.69	1.53	0.76
1999	2.82	1.59	0.78
2000	2.95	1.66	0.80
Average Annual Growth Rate 1987-2000	8.8%	8.1%	2.4%
Compound Annual Growth Rate 1987-2000	5.8%	5.5%	2.1%

Source: Based on projections from the U.S. Department of Energy, Summer 1988; forecasted price of gas was adjusted based on Foster Associates study done for EOER, Summer 1988.

Summary Statistics

(formerly Table 50)

TABLE 8
Base Case
MASSACHUSETTS
TOTAL PRIMARY ENERGY CONSUMPTION
1987-2000
(TBTUs)

	<u>Total</u>	<u>Oil</u>	<u>Gas</u>	<u>Coal</u>	<u>Nuclear</u> ¹	<u>Renew.</u> ²
1987	1359.1	860.6	229.2	135.0	79.5	54.8
1988	1363.3	847.0	234.6	135.2	86.7	59.8
1989	1394.3	829.6	240.9	134.4	135.9	61.7
1990	1390.0	810.6	254.4	134.3	125.2	66.7
1991	1412.1	791.3	295.2	130.0	125.2	66.7
1992	1438.9	793.1	319.4	130.3	125.2	67.7
1993	1462.4	798.5	337.7	130.1	125.2	68.7
1994	1481.5	806.6	341.5	137.3	125.2	68.7
1995	1518.9	831.2	351.0	140.6	125.2	68.7
1996	1546.5	844.5	360.7	142.7	125.2	68.7
1997	1567.0	855.5	370.2	145.2	125.2	68.7
1998	1600.5	874.3	382.3	147.8	125.2	68.7
1999	1616.4	882.7	389.0	148.6	125.2	68.7
2000	1645.2	899.0	399.4	150.7	125.2	68.7
Average Annual Growth Rate						
1987-2000	1.6%	0.34%	5.7%	0.9%	4.4%	1.8%
Compound Annual Growth Rate						
1987-2000	1.5%	0.34%	4.3%	0.85%	3.5%	1.7%

1. Represents electricity production by nuclear power plants.

2. Includes renewable fuel used for residential heating, utility and non-utility electricity production.

Source: SAFER Model

(formerly Table 50)

TABLE 9
High Demand Case
MASSACHUSETTS
TOTAL PRIMARY ENERGY CONSUMPTION
1987-2000
(TBTUs)

	<u>Total</u>	<u>Oil</u>	<u>Gas</u>	<u>Coal</u>	<u>Nuclear</u> ¹	<u>Renew.</u> ²
1987	1359.1	860.6	229.2	135.0	79.5	54.8
1988	1363.3	847.0	234.6	135.2	86.7	59.8
1989	1414.0	838.1	243.7	134.6	135.9	61.7
1990	1414.4	827.2	260.5	134.8	125.2	66.7
1991	1444.2	815.2	305.0	132.1	125.2	66.7
1992	1484.1	824.6	332.2	134.5	125.2	67.7
1993	1522.1	838.2	354.7	135.3	125.2	68.7
1994	1554.8	855.2	362.0	143.7	125.2	68.7
1995	1607.9	890.9	375.7	147.4	125.2	68.7
1996	1646.4	913.6	389.3	149.6	125.2	68.7
1997	1682.3	933.9	402.9	151.6	125.2	68.7
1998	1733.0	964.4	420.8	153.9	125.2	68.7
1999	1766.7	984.5	433.2	155.1	125.2	68.7
2000	1813.2	1013.4	449.4	156.5	125.2	68.7
Average Annual Growth Rate						
1987-2000	2.6%	1.4%	7.4%	1.2%	4.4%	1.8%
Compound Annual Growth Rate						
1987-2000	2.2%	1.3%	5.2%	1.1%	3.5%	1.7%

1. Represents electricity production by nuclear power plants.

2. Includes renewable fuel used for residential heating, utility and non-utility electricity production.

Source: SAFER Model

(formerly Table 51)

TABLE 10
Base Case
MASSACHUSETTS
TOTAL ENERGY USE BY SECTOR
1987-2000¹
(TBTUs)

	<u>Total</u> ²	<u>Residential</u>	<u>Commercial</u>	<u>Industrial</u>	<u>Transportation</u>
1987	1063.6	325.9	200.4	172.7	364.6
1988	1072.6	332.9	201.0	163.3	375.4
1989	1085.5	333.9	203.4	165.4	382.8
1990	1090.1	335.4	203.1	163.5	388.1
1991	1092.9	335.2	203.1	161.7	392.9
1992	1111.4	340.0	205.6	163.5	402.2
1993	1131.2	346.5	209.0	165.3	410.4
1994	1146.1	351.4	212.0	166.1	416.6
1995	1167.6	359.8	215.0	167.2	425.7
1996	1188.1	368.4	219.3	166.5	434.2
1997	1205.3	375.0	222.3	167.2	440.8
1998	1232.5	384.7	225.3	170.2	452.3
1999	1248.5	388.2	228.6	171.8	459.9
2000	1272.2	396.3	233.4	172.6	469.9
Average Annual Growth Rate 1987-2000	1.5%	1.7%	1.3%	0.0%	2.2
Compound Annual Growth Rate 1987-2000	1.4%	1.5%	1.2%	0.0%	1.9%

1. Includes oil, gas, coal, electricity and wood consumed; does not include fuel used to produce electricity.

2. The difference between this total and the total column in Table 8 is due to energy lost in the conversion of primary energy sources to electricity.

Source: SAFER Model

(formerly Table 51)

TABLE 11
High Demand Case
MASSACHUSETTS
TOTAL ENERGY USE BY SECTOR
1987-2000¹
(TBTUs)

	<u>Total</u> ²	<u>Residential</u>	<u>Commercial</u>	<u>Industrial</u>	<u>Transportation</u>
1987	1063.6	325.9	200.4	172.7	364.6
1988	1072.6	332.9	201.0	163.3	375.4
1989	1095.3	336.7	205.2	166.9	386.5
1990	1110.1	341.0	206.8	166.5	395.8
1991	1122.9	343.6	208.6	166.2	404.4
1992	1151.6	351.2	213.0	169.5	417.9
1993	1182.9	360.9	218.5	172.8	430.3
1994	1208.6	369.0	223.6	175.2	440.9
1995	1242.1	380.9	228.7	177.8	454.6
1996	1274.5	393.2	234.8	178.6	468.0
1997	1303.9	403.4	240.2	180.8	479.4
1998	1345.8	417.7	245.8	185.8	496.5
1999	1376.1	425.3	252.0	189.4	509.4
2000	1414.6	437.8	259.5	192.0	525.3
Average Annual Growth Rate 1987-2000	2.5%	2.6%	2.3%	0.86%	3.4
Compound Annual Growth Rate 1987-2000	2.2%	2.3%	2.0%	0.86%	2.8%

1. Includes oil, gas, coal, electricity and wood consumed; does not include fuel used to produce electricity.

2. The difference between this total and the total column in Table 9 is due to energy lost in the conversion of primary energy sources to electricity.

Source: SAFER Model

(formerly Table 52)

TABLE 12
Base Case
ENERGY INTENSITY OF THE
MASSACHUSETTS ECONOMY
1987-2000

	Energy Use ¹ Per Real \$ of GSP (1000 BTUs/1975\$)	Energy Intensity Index (1987=1)
1987	16.1	1.00
1988	15.9	.99
1989	15.7	.98
1990	15.2	.94
1991	14.8	.92
1992	14.7	.91
1993	14.5	.90
1994	14.4	.89
1995	14.2	.88
1996	14.3	.89
1997	14.1	.88
1998	13.9	.86
1999	13.7	.85
2000	13.5	.84

-
1. Includes oil, gas, coal, electricity and wood consumed by the residential, commercial, industrial and transportation sectors. Does not include fuel used to produce electricity.

Source: SAFER Model

(formerly Table 52)

TABLE 13
High Demand Case
ENERGY INTENSITY OF THE
MASSACHUSETTS ECONOMY
1987-2000

	Energy Use ¹ Per Real \$ of GSP (1000 BTUs/1975\$)	Energy Intensity Index (1987=1)
1987	16.1	1.00
1988	15.9	.99
1989	15.7	.98
1990	15.2	.94
1991	14.8	.92
1992	14.7	.91
1993	14.5	.90
1994	14.4	.89
1995	14.2	.88
1996	14.2	.88
1997	13.9	.86
1998	13.8	.86
1999	13.6	.84
2000	13.4	.83

1. Includes oil, gas, coal, electricity and wood consumed by the residential, commercial, industrial and transportation sectors. Does not include fuel used to produce electricity.

Source: SAFER Model

(formerly Table 53)

TABLE 14
Base and High Demand Cases
MASSACHUSETTS
ELECTRICITY GENERATION
BY RENEWABLE SMALL POWER PRODUCERS AND COGENERATORS
1987-2000
(GWH)

	<u>Total</u>	<u>Biomass</u>	<u>Hydro</u>	<u>Refuse</u>
1987	988	6	248	734
1988	1324	6	248	1070
1989	1467	149	248	1070
1990	1679	187	248	1244
1991	1729	187	248	1294
1992	1778	311	248	1294
1993	1853	311	248	1294
1994	1853	311	248	1294
1995	1853	311	248	1294
1996	1853	311	248	1294
1997	1853	311	248	1294
1998	1853	311	248	1294
1999	1853	311	248	1294
2000	1853	311	248	1294
Average Annual Growth Rate 1987-2000	6.7%	37.6%	0%	5.9%
Compound Annual Growth Rate 1987-2000	4.8%	30.0%	0%	4.4%

Source: SAFER Model; New England Governors' Conference, Inc. survey,
August 1988.

Residential Sector

(formerly Table 58)

TABLE 15
Base Case
RESIDENTIAL
ENERGY CONSUMPTION
BY FUEL TYPE
1987-2000
(TBTUs)

	<u>Total</u>	<u>Oil</u>	<u>Gas</u>	<u>Coal</u>	<u>Elec.</u>	<u>Wood</u> ¹
1987	325.9	152.5	104.0	1.1	49.7	18.7
1988	332.9	147.8	113.1	1.1	52.3	18.7
1989	333.9	145.0	116.2	1.1	52.9	18.7
1990	335.4	142.4	119.2	1.2	53.9	18.7
1991	335.1	140.5	121.1	1.2	53.6	18.7
1992	340.0	142.1	124.1	1.2	54.0	18.7
1993	346.5	142.9	128.7	1.1	55.2	18.7
1994	351.4	143.4	132.2	1.0	56.1	18.7
1995	359.8	145.6	136.8	0.9	57.9	18.7
1996	368.4	147.7	142.0	0.9	59.2	18.7
1997	375.0	148.9	146.1	0.8	60.6	18.7
1998	384.7	151.4	151.7	0.8	62.1	18.7
1999	388.2	151.7	154.7	0.7	62.4	18.7
2000	396.3	153.5	159.5	0.7	63.9	18.7
Average Annual Growth Rate						
1987-2000	1.7%	0.05%	4.1%	-2.8%	2.2%	0%
Compound Annual Growth Rate						
1987-2000	1.5%	0.05%	3.3%	-3.5%	1.9%	0%

1. 1987-2000 estimates based on 1981 data from Massachusetts Energy Path: 1983 Statistical Update to Volume I.

Source: SAFER Model

TABLE 15a
Base Case
RESIDENTIAL
ENERGY CONSUMPTION
BY FUEL TYPE
1987-2000

	Oil (MBBL)	Gas (BCF)	Coal (M.Ton)	Elec. (GWH)	Wood ¹ (1000 Cords)
1987	26.29	101.52	46.92	14,554	935
1988	25.48	110.47	48.03	15,319	935
1989	25.00	113.48	50.35	15,510	935
1990	24.55	116.44	53.42	15,788	935
1991	24.22	118.29	54.63	15,722	935
1992	24.50	121.15	51.01	15,838	935
1993	24.64	125.66	47.62	16,172	935
1994	24.73	129.12	44.43	16,442	935
1995	25.10	133.56	41.48	16,956	935
1996	25.46	138.67	38.70	17,354	935
1997	25.66	142.66	36.10	17,750	935
1998	26.10	148.17	33.70	18,212	935
1999	26.15	151.10	31.44	18,296	935
2000	26.47	155.76	29.35	18,724	935
Average Annual Growth Rate					
1987-2000	0.1%	4.1%	-2.9%	2.2%	0%
Compound Annual Growth Rate					
1987-2000	0.05%	3.3%	-3.5%	1.9%	0%

1. 1987-2000 estimates based on 1981 data from Massachusetts Energy Path: 1983 Statistical Update to Volume I.

Source: SAFER Model

(formerly Table 58)

TABLE 16
High Demand Case
RESIDENTIAL
ENERGY CONSUMPTION
BY FUEL TYPE
1987-2000
(TBTUs)

	<u>Total</u>	<u>Oil</u>	<u>Gas</u>	<u>Coal</u>	<u>Elec.</u>	<u>Wood</u> ¹
1987	325.9	152.5	104.0	1.1	49.7	18.7
1988	332.9	147.8	113.1	1.1	52.3	18.7
1989	336.7	146.0	117.5	1.1	53.4	18.7
1990	341.0	144.3	122.0	1.2	54.8	18.7
1991	343.6	143.4	125.2	1.2	55.1	18.7
1992	351.2	146.2	129.2	1.2	56.0	18.7
1993	360.9	148.2	135.2	1.1	57.7	18.7
1994	369.0	150.0	140.2	1.0	59.1	18.7
1995	380.9	153.6	146.3	0.9	61.5	18.7
1996	393.2	157.1	153.3	0.9	63.2	18.7
1997	403.4	159.9	159.2	0.8	64.8	18.7
1998	417.7	164.1	166.9	0.8	67.2	18.7
1999	425.3	165.9	171.7	0.7	68.3	18.7
2000	437.8	169.5	178.5	0.7	70.4	18.7
Average Annual Growth Rate 1987-2000	2.6%	0.9%	5.5%	-2.1%	3.2%	0%
Compound Annual Growth Rate 1987-2000	2.3%	0.8%	4.1%	-3.4%	2.7%	0%

1. 1987-2000 estimates based on 1981 data from Massachusetts Energy
Path: 1983 Statistical Update to Volume I.

Source: SAFER Model

TABLE 16a
High Demand Case
RESIDENTIAL
ENERGY CONSUMPTION
BY FUEL TYPE
1987-2000

	Oil (MBBL)	Gas (BCF)	Coal (M.Ton)	Elec. (GWH)	Wood ¹ (1000 Cords)
1987	26.29	101.52	46.92	14,554	935
1988	25.48	110.47	48.03	15,319	935
1989	25.17	114.72	50.36	15,648	935
1990	24.88	119.12	53.43	16,074	935
1991	24.72	122.28	54.65	16,151	935
1992	25.20	126.18	51.03	16,410	935
1993	25.55	132.06	47.63	16,897	935
1994	25.86	136.94	44.44	17,325	935
1995	26.47	142.84	41.49	18,011	935
1996	27.09	149.68	38.71	18,518	935
1997	27.57	155.45	36.10	19,001	935
1998	28.29	162.99	33.71	19,694	935
1999	28.61	167.71	31.45	20,011	935
2000	29.23	174.27	29.36	20,645	935
Average Annual Growth Rate					
1987-2000	0.9%	5.5%	-2.1%	3.2%	0%
Compound Annual Growth Rate					
1987-2000	0.8%	4.1%	-3.4%	2.7%	0%

1. 1987-2000 estimates based on 1981 data from Massachusetts Energy Path: 1983 Statistical Update to Volume I.

Source: SAFER Model

(formerly Table 59)

TABLE 17
Base Case
RESIDENTIAL
DELIVERED FUEL PRICES
1987-2000

	CURRENT DOLLARS				CONSTANT DOLLARS (1975\$)			
	Oil (Gallon)	Gas (MCF)	Coal (S.Ton)	Elec. (KWH)	Oil (Gallon)	Gas (MCF)	Coal (S.Ton)	Elec. (KWH)
1987	0.88	7.11	104.70	0.09	0.44	3.51	51.71	0.043
1988	0.90	6.12	134.39	0.08	0.42	2.90	63.61	0.037
1989	0.97	6.39	140.30	0.08	0.44	2.90	63.74	0.038
1990	1.10	6.99	146.12	0.08	0.48	3.05	63.86	0.036
1991	1.11	7.44	150.67	0.09	0.47	3.17	64.23	0.038
1992	1.18	8.20	156.25	0.10	0.49	3.39	64.61	0.040
1993	1.25	8.59	161.40	0.11	0.50	3.46	64.98	0.043
1994	1.33	9.17	167.07	0.11	0.52	3.59	65.35	0.044
1995	1.41	9.77	173.38	0.12	0.54	3.70	65.73	0.045
1996	1.50	10.21	180.51	0.12	0.55	3.75	66.22	0.045
1997	1.60	10.76	188.68	0.12	0.57	3.80	66.72	0.044
1998	1.71	11.31	197.11	0.13	0.58	3.86	67.22	0.044
1999	1.82	11.90	205.84	0.14	0.60	3.91	67.72	0.045
2000	2.00	12.86	220.46	0.14	0.62	3.98	68.21	0.045

Source: SAFER Model

(formerly Table 59)

TABLE 18
High Demand Case
RESIDENTIAL
DELIVERED FUEL PRICES
1987-2000

	CURRENT DOLLARS				CONSTANT DOLLARS (1975\$)			
	Oil (Gallon)	Gas (MCF)	Coal (S.Ton)	Elec. (KWH)	Oil (Gallon)	Gas (MCF)	Coal (S.Ton)	Elec. (KWH)
1987	0.88	7.11	104.70	0.09	0.44	3.51	51.71	0.043
1988	0.90	6.12	134.39	0.08	0.42	2.89	63.61	0.037
1989	0.97	6.39	140.30	0.08	0.44	2.91	63.74	0.038
1990	1.10	6.94	146.12	0.08	0.48	3.03	63.86	0.036
1991	1.11	7.38	150.67	0.09	0.47	3.15	64.23	0.038
1992	1.18	8.19	156.25	0.10	0.49	3.38	64.61	0.040
1993	1.25	8.58	161.40	0.11	0.50	3.45	64.98	0.043
1994	1.33	9.19	167.07	0.11	0.52	3.59	65.35	0.045
1995	1.41	9.80	173.38	0.12	0.54	3.71	65.73	0.045
1996	1.50	10.28	180.51	0.13	0.55	3.78	66.22	0.046
1997	1.60	10.84	188.68	0.13	0.57	3.83	66.72	0.044
1998	1.71	11.38	197.11	0.13	0.58	3.88	67.22	0.045
1999	1.82	11.99	205.84	0.14	0.60	3.94	67.72	0.046
2000	2.00	13.01	220.46	0.15	0.62	4.02	68.21	0.046

Source: SAFER Model

(formerly Table 60)

TABLE 19
Base Case
RESIDENTIAL
SPACE HEATING ENERGY CONSUMPTION
BY FUEL TYPE
1987-2000
(TBTUs)

	<u>Total</u>	<u>Oil</u>	<u>Gas</u>	<u>Coal</u>	<u>Elec.</u>	<u>Wood</u> ¹
1987	220.55	127.39	67.51	1.06	5.90	18.7
1988	223.30	123.27	73.72	1.08	6.57	18.7
1989	223.46	120.79	75.93	1.13	6.89	18.7
1990	223.86	118.46	78.10	1.20	7.60	18.7
1991	223.59	116.69	79.41	1.23	7.56	18.7
1992	226.65	117.90	81.21	1.15	7.69	18.7
1993	230.10	118.39	84.08	1.07	7.86	18.7
1994	232.53	118.61	86.26	1.00	7.96	18.7
1995	237.06	120.17	89.09	0.93	8.16	18.7
1996	241.86	121.64	92.39	0.87	8.26	18.7
1997	245.27	122.42	94.95	0.81	8.39	18.7
1998	250.77	124.26	98.53	0.76	8.53	18.7
1999	252.54	124.27	100.36	0.71	8.50	18.7
2000	256.90	125.56	103.34	0.66	8.63	18.7
Average Annual Growth Rate 1987-2000	1.3%	-0.11%	4.1%	-2.9%	3.6%	0%
Compound Annual Growth Rate 1987-2000	1.0%	-0.11%	3.0%	-3.6%	3.0%	0%

1. 1987-2000 EOER projections based on 1981 data from Massachusetts
Energy Path: 1983 Statistical Update to Volume I.

Source: SAFER Model

TABLE 19a
Base Case
RESIDENTIAL
SPACE HEATING ENERGY CONSUMPTION
BY FUEL TYPE
1987-2000

	Oil (MBBL)	Gas (BCF)	Coal (M.Ton)	Elec. (GWH)	Wood ¹ (1000 Cords)
1987	21.87	65.93	43.98	1729	935
1988	21.16	71.99	45.03	1926	935
1989	20.74	74.16	47.20	2021	935
1990	20.34	76.27	50.08	2168	935
1991	20.03	76.55	51.22	2215	935
1992	20.24	79.31	47.83	2254	935
1993	20.32	82.11	44.64	2303	935
1994	20.36	84.24	41.65	2333	935
1995	20.63	87.00	38.89	2390	935
1996	20.88	90.23	36.28	2420	935
1997	21.02	92.73	33.84	2458	935
1998	21.33	96.22	31.60	2500	935
1999	21.33	98.01	29.48	2491	935
2000	21.56	100.92	27.52	2530	935
Average Annual Growth Rate					
1987-2000	-0.11%	4.1%	-2.9%	3.6%	0%
Compound Annual Growth Rate					
1987-2000	-0.11%	3.0%	-3.6%	3.0%	0%

1. 1987-2000 EOER projections based on 1981 data from Massachusetts Energy Path: 1983 Statistical Update to Volume I.

Source: SAFER Model

(formerly Table 60)

TABLE 20
High Demand Case
RESIDENTIAL
SPACE HEATING ENERGY CONSUMPTION
BY FUEL TYPE
1987-2000
(TBTUs)

	<u>Total</u>	<u>Oil</u>	<u>Gas</u>	<u>Coal</u>	<u>Elec.</u>	<u>Wood</u> ¹
1987	220.55	127.39	67.51	1.06	5.90	18.7
1988	223.30	123.23	73.72	1.08	6.57	18.7
1989	225.23	121.61	76.80	1.13	6.99	18.7
1990	227.47	120.03	79.95	1.20	7.59	18.7
1991	228.96	119.06	82.14	1.23	7.84	18.7
1992	233.72	121.22	84.61	1.15	8.04	18.7
1993	239.09	122.68	88.36	1.07	8.28	18.7
1994	243.51	123.91	91.46	1.00	8.45	18.7
1995	250.18	126.60	95.23	0.93	8.71	18.7
1996	257.31	129.27	99.63	0.87	8.83	18.7
1997	263.08	131.28	103.33	0.81	8.95	18.7
1998	271.28	134.46	108.21	0.76	9.16	18.7
1999	275.48	135.68	111.18	0.71	9.20	18.7
2000	282.48	138.35	115.37	0.66	9.40	18.7
Average Annual Growth Rate						
1987-2000	2.2%	0.66%	5.5%	-2.9%	4.6%	0%
Compound Annual Growth Rate						
1987-2000	1.9%	0.64%	4.1%	-3.6%	3.6%	0%

1. 1987-2000 EOER projections based on 1981 data from Massachusetts Energy Path: 1983 Statistical Update to Volume I.

Source: SAFER Model

TABLE 20a
High Demand Case
RESIDENTIAL
SPACE HEATING ENERGY CONSUMPTION
BY FUEL TYPE
1987-2000

	Oil (MBBL)	Gas (BCF)	Coal (M.Ton)	Elec. (GWH)	Wood ¹ (1000 Cords)
1987	21.87	65.93	43.98	1729	935
1988	21.16	71.99	45.03	1926	935
1989	20.88	75.00	47.21	2048	935
1990	20.61	78.07	50.09	2224	935
1991	20.44	80.22	51.23	2296	935
1992	20.81	82.63	47.84	2356	935
1993	21.06	86.29	44.66	2426	935
1994	21.27	89.31	41.66	2476	935
1995	21.73	93.00	38.89	2553	935
1996	22.19	97.30	36.29	2588	935
1997	22.54	100.91	33.85	2624	935
1998	23.08	105.67	31.60	2685	935
1999	23.29	108.58	29.48	2698	935
2000	23.75	112.66	27.52	2755	935
Average Annual Growth Rate					
1987-2000	0.66%	5.5%	-2.9%	4.6%	0%
Compound Annual Growth Rate					
1987-2000	0.64%	4.1%	-3.6%	3.6%	0%

1. 1987-2000 EOER projections based on 1981 data from Massachusetts Energy Path: 1983 Statistical Update to Volume I.

Source: SAFER Model

(formerly Table 61)

TABLE 21
Base Case
RESIDENTIAL SECTOR
BASIC ECONOMIC AND
DEMOGRAPHIC STATISTICS
1987-2000

	Population (Thousands)	Number of Households (Thousands)	Personal Income (Billions of 1975\$)
1987	5892	2224	55.61
1988	5937	2266	58.10
1989	5981	2300	59.96
1990	6055	2347	61.50
1991	6085	2367	62.93
1992	6120	2400	64.15
1993	6156	2433	66.43
1994	6193	2458	67.60
1995	6228	2460	69.75
1996	6272	2491	71.62
1997	6282	2574	73.49
1998	6333	2617	76.43
1999	6371	2655	78.42
2000	6406	2703	80.57
Average Annual Growth Rate 1987-2000	0.67%	1.7%	3.5%
Compound Annual Growth Rate 1987-2000	0.64%	1.5%	2.8%

Source: SAFER Model; U.S. Department of Commerce, Bureau of
Census

(formerly Table 61)

TABLE 22
High Demand Case
RESIDENTIAL SECTOR
BASIC ECONOMIC AND
DEMOGRAPHIC STATISTICS
1987-2000

	Population (Thousands)	Number of Households (Thousands)	Personal Income (Billions of 1975\$)
1987	5892	2224	55.61
1988	5937	2266	58.10
1989	5981	2300	60.57
1990	6055	2347	62.72
1991	6085	2367	64.80
1992	6120	2400	66.70
1993	6156	2433	69.73
1994	6193	2458	71.63
1995	6228	2460	74.60
1996	6272	2491	77.31
1997	6282	2574	80.07
1998	6333	2617	84.04
1999	6371	2655	87.03
2000	6406	2703	90.25
Average Annual Growth Rate 1987-2000	0.67%	1.7%	4.8%
Compound Annual Growth Rate 1987-2000	0.64%	1.5%	3.7%

Source: SAFER Model; U.S. Department of Commerce, Bureau of
Census

(formerly Table 62)

TABLE 23
Base Case
HOUSEHOLD AVERAGE
SPACE HEATING
ENERGY CONSUMPTION
1987-2000

	<u>Total Residential Space Heating Consumption (TBTUs)</u>	<u>Number of Households (Thousands)</u>	<u>Average Household Consumption (mmBTUs)</u>
1987	220.55	2224	99.2
1988	223.30	2266	98.5
1989	223.46	2300	97.2
1990	223.86	2347	95.4
1991	223.59	2367	94.5
1992	226.65	2400	94.4
1993	230.10	2433	94.6
1994	232.53	2458	94.6
1995	237.06	2460	95.2
1996	241.86	2491	98.3
1997	245.27	2574	95.3
1998	250.77	2617	95.8
1999	252.54	2655	95.1
2000	256.90	2703	95.0

Sources: SAFER Model

(formerly Table 62)

TABLE 24
High Demand Case
HOUSEHOLD AVERAGE
SPACE HEATING
ENERGY CONSUMPTION
1987-2000

	<u>Total Residential Space Heating Consumption (TBTUs)</u>	<u>Number of Households (Thousands)</u>	<u>Average Household Consumption (mmBTUs)</u>
1987	220.55	2224	99.2
1988	223.30	2266	98.5
1989	225.23	2300	98.0
1990	227.47	2347	96.9
1991	228.96	2367	96.7
1992	233.72	2400	97.4
1993	239.09	2433	98.3
1994	243.51	2458	99.1
1995	250.18	2460	100.4
1996	257.31	2491	104.6
1997	263.08	2574	102.2
1998	271.28	2617	103.7
1999	275.48	2655	103.8
2000	282.48	2703	104.5

Sources: SAFER Model

(formerly Table 63)

TABLE 25
Base Case
RESIDENTIAL
SUBSTITUTABLE END-USES
ENERGY CONSUMPTION
1987-2000
(TBTUs)

	<u>Total</u>	<u>Water Heating</u>	<u>Cooking</u>	<u>Drying</u>
1987	74.43	63.80	5.95	4.68
1988	77.09	65.73	6.29	5.06
1989	77.52	65.90	6.38	5.24
1990	78.07	66.22	6.43	5.42
1991	78.20	66.26	6.40	5.55
1992	79.65	67.45	6.45	5.75
1993	81.78	69.16	6.60	6.03
1994	83.45	70.47	6.71	6.27
1995	85.98	72.51	6.90	6.58
1996	88.67	74.70	7.08	6.89
1997	90.80	76.40	7.23	7.17
1998	93.78	78.84	7.43	7.51
1999	95.17	79.96	7.49	7.72
2000	97.73	82.04	7.67	8.03
Average Annual Growth Rate 1987-2000	2.4%	2.2%	2.2%	5.5%
Compound Annual Growth Rate 1987-2000	2.0%	1.9%	1.9%	4.0%

Source: SAFER Model

(formerly Table 63)

TABLE 26
High Demand Case
RESIDENTIAL
SUBSTITUTABLE END-USES
ENERGY CONSUMPTION
1987-2000
(TBTUs)

	<u>Total</u>	<u>Water Heating</u>	<u>Cooking</u>	<u>Drying</u>
1987	74.43	63.80	5.95	4.68
1988	77.09	65.73	6.29	5.06
1989	78.19	66.47	6.44	5.29
1990	79.50	67.42	6.55	5.53
1991	80.38	68.09	6.58	5.71
1992	82.55	69.89	6.69	5.96
1993	85.53	72.31	6.90	6.32
1994	88.10	74.39	7.08	6.63
1995	91.58	77.23	7.34	7.02
1996	95.29	80.29	7.58	7.42
1997	98.44	82.87	7.79	7.78
1998	102.66	86.35	8.09	8.23
1999	105.20	88.42	8.24	8.54
2000	108.99	91.52	8.51	8.96
Average Annual Growth Rate 1987-2000	3.6%	3.3%	3.3%	7.0%
Compound Annual Growth Rate 1987-2000	2.9%	1.9%	2.7%	5.0%

Source: SAFER Model

(formerly Table 65)

TABLE 27
Base Case
RESIDENTIAL
WATER HEATING ENERGY CONSUMPTION
BY FUEL TYPE
1987-2000
(TBTUs)

	<u>Total</u>	<u>Oil</u>	<u>Gas</u>	<u>Electric</u>
1987	63.80	25.12	30.88	7.80
1988	65.73	24.54	33.32	7.87
1989	65.90	24.19	33.99	7.73
1990	66.22	23.93	34.76	7.53
1991	66.26	23.76	35.24	7.26
1992	67.45	24.19	36.17	7.09
1993	69.16	24.52	37.63	7.00
1994	70.47	24.81	38.74	6.93
1995	72.51	25.41	40.16	6.95
1996	74.70	26.00	41.77	6.93
1997	76.40	26.43	43.03	6.95
1998	78.84	27.12	44.74	6.99
1999	79.96	27.38	45.68	6.90
2000	82.04	27.94	47.16	6.94
Average Annual Growth Rate 1987-2000	2.2%	0.86%	4.1%	-0.85%
Compound Annual Growth Rate 1987-2000	1.9%	0.82%	3.3%	-1.0%

Source: SAFER Model

TABLE 27a
Base Case
RESIDENTIAL
WATER HEATING ENERGY CONSUMPTION
BY FUEL TYPE
1987-2000

	Oil (MBBL)	Gas (BCF)	Electricity (GWH)
1987	4.31	30.15	2287
1988	4.21	32.54	2306
1989	4.15	33.19	2264
1990	4.11	33.94	2207
1991	4.08	34.41	2128
1992	4.15	35.33	2078
1993	4.21	36.75	2053
1994	4.26	37.83	2030
1995	4.36	39.22	2036
1996	4.46	40.79	2032
1997	4.54	42.02	2038
1998	4.66	43.69	2047
1999	4.70	44.61	2022
2000	4.80	46.05	2035
Average Annual Growth Rate 1987-2000	0.86%	4.1%	-0.85%
Compound Annual Growth Rate 1987-2000	0.82%	3.3%	-1.0%

Source: SAFER Model

(formerly Table 65)

TABLE 28
High Demand Case
RESIDENTIAL
WATER HEATING ENERGY CONSUMPTION
BY FUEL TYPE
1987-2000
(TBTUs)

	<u>Total</u>	<u>Oil</u>	<u>Gas</u>	<u>Electric</u>
1987	63.80	25.12	30.88	7.80
1988	65.73	24.54	33.32	7.87
1989	66.47	24.36	34.33	7.78
1990	67.42	24.28	35.52	7.62
1991	68.09	24.29	36.40	7.39
1992	69.89	24.95	37.68	7.26
1993	72.31	25.52	39.57	7.22
1994	74.39	26.06	41.14	7.19
1995	77.23	26.95	43.02	7.26
1996	80.29	27.86	45.17	7.26
1997	82.87	28.60	46.98	7.28
1998	86.35	29.65	49.33	7.37
1999	88.42	30.23	50.84	7.34
2000	91.52	31.17	52.92	7.43
Average Annual Growth Rate 1987-2000	3.3%	1.9%	5.5%	-0.36%
Compound Annual Growth Rate 1987-2000	2.8%	1.6%	4.1%	-0.37%

Source: SAFER Model

TABLE 28a
High Demand Case
RESIDENTIAL
WATER HEATING ENERGY CONSUMPTION
BY FUEL TYPE
1987-2000

	<u>Oil</u> (MBBL)	<u>Gas</u> (BCF)	<u>Electricity</u> (GWH)
1987	4.31	30.15	2287
1988	4.21	32.54	2306
1989	4.18	33.53	2279
1990	4.17	34.69	2234
1991	4.17	35.55	2167
1992	4.28	36.80	2129
1993	4.38	38.65	2116
1994	4.47	40.18	2107
1995	4.63	42.01	2128
1996	4.78	44.11	2129
1997	4.91	45.88	2134
1998	5.09	48.18	2158
1999	5.19	49.65	2151
2000	5.35	51.68	2179
Average Annual Growth Rate			
1987-2000	1.9%	5.5%	-0.36%
Compound Annual Growth Rate			
1987-2000	1.6%	4.1%	-0.37%

Source: SAFER Model

(formerly Table 66)

TABLE 29
Base Case
RESIDENTIAL ELECTRICITY CONSUMPTION BY END-USE
1987-2000
(GWH)

	Total	Space Heating	SUBSTITUTABLE END-USES				ELECTRICITY END-USES			
			Water Heating	Cooking	Drying		Refrig.	Lighting	AC	Misc.
1987	14,554	1729	2287	923	559		3388	1055	707	3907
1988	15,319	1926	2306	971	577		3527	1100	827	4085
1989	15,510	2021	2264	985	580		3544	1107	885	4124
1990	15,788	2168	2207	1014	590		3587	1122	915	4186
1991	15,722	2215	2128	1014	589		3569	1116	927	4165
1992	15,838	2254	2078	1027	595		3607	1126	951	4202
1993	16,172	2303	2053	1053	606		3707	1154	991	4305
1994	16,442	2333	2030	1074	616		3796	1177	1028	4388
1995	16,956	2390	2036	1111	637		3946	1218	1081	4536
1996	17,354	2420	2032	1141	654		4075	1251	1129	4653
1997	17,750	2458	2038	1170	674		4197	1280	1175	4758
1998	18,212	2500	2047	1204	696		4341	1315	1226	4882
1999	18,296	2491	2022	1210	702		4394	1321	1252	4901
2000	18,724	2530	2035	1240	722		4530	1353	1300	5013

Average Annual
Growth Rate
1987-00 2.2%

2.6% 2.2% 6.5% 2.2%

Compound Annual
Growth Rate
1987-00 2.0%

2.2% 1.9% 4.7% 1.9%

Source: SAFER Model

(formerly Table 66)

TABLE 30
High Demand Case
RESIDENTIAL ELECTRICITY CONSUMPTION BY END-USE
1987-2000
(GWH)

	Total	Space Heating	SUBSTITUTABLE END-USES				ELECTRICITY END-USES			
			Water Heating	Cooking	Drying	Refrig.	Lighting	AC	Misc.	
1987	14,554	1729	2287	923	559	3388	1055	707	3907	
1988	15,319	1926	2306	971	577	3527	1100	827	4085	
1989	15,648	2048	2279	994	584	3574	1117	893	4161	
1990	16,074	2224	2234	1034	598	3648	1142	931	4263	
1991	16,151	2296	2167	1044	602	3662	1147	951	4282	
1992	16,410	2356	2129	1068	613	3734	1168	984	4360	
1993	16,897	2426	2116	1105	629	3872	1208	1033	4507	
1994	17,325	2476	2107	1136	645	4001	1244	1081	4635	
1995	18,011	2553	2128	1186	672	4196	1298	1146	4832	
1996	18,518	2588	2129	1222	691	4360	1341	1204	4984	
1997	19,001	2624	2134	1256	711	4515	1379	1259	5122	
1998	19,694	2685	2158	1303	737	4729	1434	1330	5318	
1999	20,011	2698	2151	1324	750	4846	1460	1374	5407	
2000	20,645	2755	2179	1367	775	5040	1510	1439	5581	

Average Annual
Growth Rate
1987-00 3.2%

Compound Annual
Growth Rate
1987-00 2.7%

3.8% 3.3% 8.0% 3.3%

3.1% 2.8% 5.5% 2.7%

Source: SAFER Model

(formerly Table 67)

TABLE 31
Base Case
RESIDENTIAL
NEW ELECTRIC APPLIANCE
EFFICIENCIES
1987-2000

	<u>Refrigeration</u>	<u>Lighting</u>	<u>Air Conditioning</u>
1987	0.33	0.50	2.36
1988	0.37	0.51	2.28
1989	0.37	0.51	2.31
1990	0.43	0.51	2.60
1991	0.43	0.51	2.61
1992	0.43	0.52	2.65
1993	0.43	0.52	2.65
1994	0.43	0.53	2.65
1995	0.43	0.53	2.65
1996	0.43	0.54	2.65
1997	0.43	0.54	2.65
1998	0.43	0.55	2.66
1999	0.43	0.55	2.70
2000	0.43	0.56	2.73

1. Includes impacts of MA and national appliance efficiency standards.

Source: SAFER Model

(formerly Table 67)

TABLE 32
High Demand Case
RESIDENTIAL
NEW ELECTRIC APPLIANCE
EFFICIENCIES
1987-2000¹

	<u>Refrigeration</u>	<u>Lighting</u>	<u>Air Conditioning</u>
1987	0.33	0.50	2.36
1988	0.37	0.51	2.28
1989	0.37	0.51	2.31
1990	0.43	0.51	2.60
1991	0.43	0.51	2.61
1992	0.43	0.52	2.65
1993	0.43	0.52	2.65
1994	0.43	0.53	2.65
1995	0.43	0.53	2.65
1996	0.43	0.54	2.65
1997	0.43	0.54	2.65
1998	0.43	0.55	2.69
1999	0.43	0.55	2.73
2000	0.43	0.56	2.76

1. Includes impacts of MA (effective 1988) and national
(effective 1990 and 1992) appliance efficiency standards.

Source: SAFER Model

(formerly Table 69)

TABLE 33
Base Case
RESIDENTIAL PEAK ELECTRICITY DEMAND BY END-USE¹
1987-2000
(MW)

	TOTAL	SPACE HEATING ²	WATER HEATING	COOKING	DRYING	REFRIGERATOR	LIGHTING	AC	MISC. ²
1987	2156	1170	121	90	76	434	48	998	952
1988	2373	1303	122	95	79	452	50	1169	995
1989	2459	1368	120	97	79	454	50	1250	1005
1990	2523	1467	117	99	81	460	51	1293	1020
1991	2516	1499	113	99	80	457	50	1309	1015
1992	2566	1525	110	101	81	462	51	1344	1024
1993	2649	1559	109	103	83	475	52	1400	1049
1994	2724	1579	108	105	84	486	53	1452	1069
1995	2842	1618	108	109	87	506	55	1528	1105
1996	2944	1638	108	112	89	522	56	1595	1134
1997	3042	1663	108	115	92	538	58	1660	1159
1998	3155	1692	109	118	95	556	59	1733	1190
1999	3200	1686	107	119	96	563	59	1769	1194
2000	3305	1713	108	121	99	580	61	1837	1221

1. Refers to summer peak demand.

2. Demand coincident with system winter peak.

(formerly Table 69)

TABLE 34
High Demand Case
RESIDENTIAL PEAK ELECTRICITY DEMAND BY END-USE¹
1987-2000
(MW)

	TOTAL	SPACE HEATING ²	WATER HEATING	COOKING	DRYING	REFRIGERATOR	LIGHTING	AC	MISC. ²
1987	2156	1170	121	90	76	434	48	998	952
1988	2373	1303	122	95	79	452	50	1169	995
1989	2481	1386	121	97	80	458	50	1262	1014
1990	2560	1505	119	101	82	467	51	1316	1039
1991	2589	1554	115	102	82	469	52	1343	1043
1992	2656	1595	113	105	84	478	53	1390	1062
1993	2765	1642	112	108	86	496	54	1460	1098
1994	2868	1676	112	111	88	513	56	1527	1129
1995	3017	1728	113	116	92	538	58	1620	1177
1996	3142	1752	113	120	94	559	60	1701	1214
1997	3262	1776	113	123	97	578	62	1779	1248
1998	3420	1817	115	128	101	606	65	1879	1296
1999	3511	1826	114	130	102	621	66	1941	1318
2000	3657	1864	116	134	106	646	68	2033	1360

1. Refers to summer peak demand.

2. Demand coincident with system winter peak.

Commercial Sector

(formerly Table 70)

TABLE 35
Base Case
COMMERCIAL
ENERGY CONSUMPTION
BY FUEL TYPE
1987-2000
(TBTUs)

	<u>Total</u>	<u>Oil</u>	<u>Gas</u>	<u>Coal</u>	<u>Elec.</u> ¹
1987	200.4	85.4	59.1	1.1	54.8
1988	201.0	81.6	61.4	1.1	56.8
1989	203.4	80.8	62.9	1.2	58.5
1990	203.1	78.4	63.5	1.3	61.4
1991	203.1	77.1	64.3	1.4	60.4
1992	205.6	77.9	65.5	1.2	61.0
1993	209.0	78.5	67.1	1.1	62.2
1994	212.0	78.8	68.7	1.0	63.6
1995	215.0	79.1	69.8	0.9	65.2
1996	219.0	79.8	71.6	0.8	66.8
1997	222.3	80.2	72.9	0.7	68.4
1998	225.2	80.6	74.2	0.6	69.7
1999	228.6	81.4	75.7	0.6	70.9
2000	233.4	82.4	77.4	0.5	73.0
Average Annual Growth Rate 1987-2000	1.3%	-0.3%	2.4%	-3.9%	2.6%
Compound Annual Growth Rate 1987-2000	1.2%	-0.3%	2.1%	-6.0%	2.2%

1. Utility sales only.

Source: SAFER Model

TABLE 35a
Base Case
COMMERCIAL
ENERGY CONSUMPTION
BY FUEL TYPE
1987-2000

	Oil (MBBL)	Gas (BCF)	Coal (M.Ton)	Elec. ¹ (GWH)
1987	14.72	57.71	46.95	16,074
1988	14.07	60.01	51.25	16,644
1989	13.93	61.39	55.25	17,154
1990	13.52	61.99	58.74	17,548
1991	13.29	62.76	60.27	17,696
1992	13.43	63.94	54.22	17,875
1993	13.54	65.58	48.82	18,237
1994	13.58	67.05	43.96	18,633
1995	13.63	68.17	39.59	19,109
1996	13.76	69.93	35.64	19,567
1997	13.83	71.24	32.07	20,052
1998	13.91	72.48	28.88	20,437
1999	14.03	73.92	26.02	20,794
2000	14.21	75.63	23.43	21,406
Average Annual Growth Rate				
1987-2000	-0.2%	2.4%	-3.9%	2.6%
Compound Annual Growth Rate				
1987-2000	-0.3%	2.1%	-6.0%	2.2%

1. Utility sales only.

Source: SAFER Model

(formerly Table 70)

TABLE 36
High Demand Case
COMMERCIAL
ENERGY CONSUMPTION
BY FUEL TYPE
1987-2000
(TBTUs)

	<u>Total</u>	<u>Oil</u>	<u>Gas</u>	<u>Coal</u>	<u>Elec.</u> ¹
1987	200.4	85.4	59.1	1.1	54.8
1988	201.0	81.6	61.4	1.1	56.8
1989	205.3	81.4	63.5	1.2	59.0
1990	206.8	79.7	64.9	1.3	60.9
1991	208.7	78.9	66.4	1.4	62.0
1992	213.0	80.4	68.1	1.2	63.2
1993	218.5	81.8	70.5	1.1	65.1
1994	223.6	82.8	72.8	1.0	67.1
1995	228.7	83.8	74.6	0.9	69.4
1996	234.8	85.4	77.2	0.8	71.4
1997	240.3	86.7	79.4	0.7	73.4
1998	245.8	88.0	81.6	0.7	75.6
1999	252.0	89.6	84.0	0.6	77.8
2000	259.5	91.6	86.6	0.5	80.8
Average Annual Growth Rate 1987-2000	2.3%	0.56%	3.6%	-3.8%	3.6%
Compound Annual Growth Rate 1987-2000	2.0%	0.64%	2.9%	-6.0%	3.0%

1. Utility sales only.

Source: SAFER Model

TABLE 36a
High Demand Case
COMMERCIAL
ENERGY CONSUMPTION
BY FUEL TYPE
1987-2000

	Oil (MBBL)	Gas (BCF)	Coal (M.Ton)	Elec. ¹ (GWH)
1987	14.72	57.71	46.95	16,074
1988	14.07	60.01	51.25	16,644
1989	14.04	62.04	55.25	17,304
1990	13.73	63.37	58.75	17,863
1991	13.61	64.81	60.28	18,177
1992	13.87	66.53	54.23	18,529
1993	14.11	68.87	48.82	19,072
1994	14.27	71.06	43.97	19,658
1995	14.45	72.86	39.59	20,332
1996	14.72	75.43	35.64	20,920
1997	14.95	77.58	32.07	21,514
1998	15.17	79.70	28.89	22,157
1999	15.45	82.01	26.02	22,804
2000	15.79	84.60	23.43	23,675
Average Annual Growth Rate				
1987-2000	0.56%	3.6%	-3.8%	3.6%
Compound Annual Growth Rate				
1987-2000	0.64%	2.9%	-6.0%	3.0%

1. Utility sales only.

Source: SAFER Model

(formerly Table 71)

TABLE 37
Base Case
COMMERCIAL
DELIVERED FUEL PRICES
1987-2000

	CURRENT DOLLARS				CONSTANT DOLLARS (1975\$)			
	Oil (Gallon)	Gas (MCF)	Coal (S.Ton)	Elec. (KWH)	Oil (Gallon)	Gas (MCF)	Coal (S.Ton)	Elec. (KWH)
1987	0.58	6.52	56.88	0.08	0.29	3.22	28.09	0.042
1988	0.54	5.50	66.56	0.08	0.25	2.61	31.51	0.037
1989	0.59	5.75	69.63	0.08	0.27	2.61	31.63	0.037
1990	0.71	6.32	72.66	0.08	0.31	2.76	31.76	0.035
1991	0.79	6.74	75.36	0.09	0.34	2.88	32.13	0.037
1992	0.85	7.49	78.60	0.09	0.35	3.10	32.50	0.038
1993	0.91	7.86	81.65	0.10	0.37	3.16	32.88	0.040
1994	0.98	8.42	85.00	0.11	0.38	3.29	33.25	0.041
1995	1.05	8.99	88.69	0.11	0.40	3.41	33.62	0.041
1996	1.13	9.41	93.00	0.11	0.41	3.45	34.12	0.042
1997	1.22	9.93	97.89	0.11	0.43	3.51	34.62	0.040
1998	1.31	10.45	102.96	0.12	0.45	3.56	35.11	0.041
1999	1.41	11.00	108.24	0.12	0.46	3.62	35.61	0.041
2000	1.56	11.93	116.69	0.13	0.48	3.69	36.11	0.041

Source: SAFER Model

(formerly Table 71)

TABLE 38
High Demand Case
COMMERCIAL
DELIVERED FUEL PRICES
1987-2000

	CURRENT DOLLARS				CONSTANT DOLLARS (1975\$)			
	Oil (Gallon)	Gas (MCF)	Coal (S.Ton)	Elec. (KWH)	Oil (Gallon)	Gas (MCF)	Coal (S.Ton)	Elec. (KWH)
1987	0.58	6.52	56.88	0.08	0.29	3.22	28.09	0.042
1988	0.54	5.50	66.56	0.08	0.25	2.61	31.51	0.037
1989	0.59	5.75	69.63	0.08	0.27	2.61	31.63	0.037
1990	0.71	6.27	72.66	0.08	0.31	2.74	31.76	0.035
1991	0.79	6.69	75.36	0.09	0.34	2.85	32.13	0.037
1992	0.85	7.47	78.60	0.09	0.35	3.09	32.50	0.038
1993	0.91	7.85	81.65	0.10	0.37	3.16	32.88	0.040
1994	0.98	8.43	85.00	0.11	0.38	3.30	33.25	0.042
1995	1.05	9.03	88.69	0.11	0.40	3.42	33.62	0.042
1996	1.13	9.48	93.00	0.11	0.41	3.48	34.12	0.042
1997	1.22	10.01	97.89	0.12	0.43	3.54	34.62	0.041
1998	1.31	10.52	102.96	0.12	0.45	3.59	35.11	0.042
1999	1.41	11.10	108.24	0.13	0.46	3.65	35.61	0.043
2000	1.56	12.08	116.69	0.14	0.48	3.74	36.11	0.043

Source: SAFER Model

(formerly Table 72)

TABLE 39
Base Case
COMMERCIAL
SPACE HEATING ENERGY CONSUMPTION
BY FUEL TYPE
1987-2000
(TBTUs)

	<u>Total</u>	<u>Oil</u>	<u>Gas</u>	<u>Coal</u>	<u>Elec.</u> ¹
1987	138.21	74.72	56.03	1.05	6.40
1988	137.33	70.91	58.34	1.15	6.93
1989	138.46	70.03	59.76	1.24	7.44
1990	137.21	67.50	60.41	1.32	8.00
1991	136.97	66.12	61.21	1.35	8.30
1992	138.93	66.78	62.39	1.21	8.55
1993	141.15	67.24	64.01	1.09	8.81
1994	142.78	67.28	65.46	0.98	9.06
1995	144.18	67.40	66.56	0.88	9.33
1996	146.55	67.88	68.29	0.80	9.59
1997	148.29	68.11	69.58	0.72	9.89
1998	149.84	68.32	70.79	0.64	10.09
1999	151.77	68.76	72.18	0.58	10.25
2000	154.37	69.50	73.85	0.52	10.51
Average Annual Growth Rate 1987-2000	0.90%	-0.53%	2.4%	-3.9%	4.9%
Compound Annual Growth Rate 1987-2000	0.85%	-0.56%	2.1%	-5.4%	3.8%

1. Utility sales only.

Source: SAFER Model

TABLE 39a
Base Case
COMMERCIAL
SPACE HEATING ENERGY CONSUMPTION
BY FUEL TYPE
1987-2000

	Oil (MBBL)	Gas (BCF)	Coal (M.Ton)	Elec. ¹ (GWH)
1987	12.83	54.72	43.83	1875
1988	12.17	56.97	47.82	2031
1989	12.02	58.36	51.54	2180
1990	11.59	58.99	54.78	2344
1991	11.35	59.77	56.18	2432
1992	11.47	60.92	50.52	2506
1993	11.54	62.51	45.47	2581
1994	11.55	63.93	40.94	2654
1995	11.57	65.00	36.85	2735
1996	11.65	66.69	33.15	2811
1997	11.69	67.94	29.82	2898
1998	11.73	69.13	26.84	2957
1999	11.81	70.49	24.16	3003
2000	11.93	72.12	21.75	3079
Average Annual Growth Rate				
1987-2000	-0.53%	2.4%	-3.9%	4.9%
Compound Annual Growth Rate				
1987-2000	-0.56%	2.1%	-5.4%	3.8%

1. Utility sales only.

Source: SAFER Model

(formerly Table 72)

TABLE 40
High Demand Case
COMMERCIAL
SPACE HEATING ENERGY CONSUMPTION
BY FUEL TYPE
1987-2000
(TBTUs)

	<u>Total</u>	<u>Oil</u>	<u>Gas</u>	<u>Coal</u>	<u>Elec.</u> ¹
1987	138.21	74.72	56.03	1.05	6.40
1988	137.33	70.91	58.34	1.15	6.93
1989	139.74	70.58	60.39	1.24	7.53
1990	139.83	68.55	61.76	1.31	8.20
1991	140.85	67.68	63.22	1.35	8.59
1992	144.04	68.94	64.94	1.21	8.94
1993	147.65	70.01	67.24	1.09	9.30
1994	150.70	70.68	69.39	0.98	9.64
1995	153.51	71.44	71.17	0.88	10.02
1996	157.40	72.61	73.68	0.80	10.31
1997	160.66	73.57	75.78	0.72	10.59
1998	163.85	74.50	77.84	0.64	10.87
1999	167.48	75.70	80.09	0.58	11.10
2000	171.81	77.23	82.61	0.52	11.45
Average Annual Growth Rate 1987-2000	1.9%	0.26%	3.7%	-3.9%	6.1%
Compound Annual Growth Rate 1987-2000	1.7%	0.25%	3.0%	-4.2%	4.5%

2. Utility sales only.

Source: SAFER Model

TABLE 40a
High Demand Case
COMMERCIAL
SPACE HEATING ENERGY CONSUMPTION
BY FUEL TYPE
1987-2000

	Oil (MBBL)	Gas (BCF)	Coal (M.Ton)	Elec. ¹ (GWH)
1987	12.83	54.72	43.83	1875
1988	12.17	56.97	47.82	2031
1989	12.12	58.98	51.54	2207
1990	11.77	60.32	54.79	2402
1991	11.62	61.74	56.19	2519
1992	11.84	63.42	50.53	2621
1993	12.02	65.67	45.48	2725
1994	12.13	67.77	40.94	2827
1995	12.26	69.50	36.85	2936
1996	12.47	71.96	33.16	3021
1997	12.63	74.01	29.82	3105
1998	12.79	76.02	26.84	3185
1999	13.00	78.21	24.17	3256
2000	13.26	80.67	21.75	3356
Average Annual Growth Rate				
1987-2000	0.26%	3.7%	-3.9%	6.1%
Compound Annual Growth Rate				
1987-2000	0.25%	3.0%	-4.2%	4.5%

1. Utility sales only.

Source: SAFER Model

(formerly Table 73)

TABLE 41
Base Case
COMMERCIAL
WATER HEATING AND COOKING
ENERGY CONSUMPTION
1987-2000
(TBTUs)

	<u>Total</u>	<u>Water Heating</u>	<u>Cooking</u>
1987	6.36	5.03	1.33
1988	6.45	5.08	1.37
1989	6.55	5.16	1.39
1990	6.58	5.19	1.39
1991	6.62	5.22	1.40
1992	6.73	5.31	1.42
1993	6.88	5.42	1.46
1994	7.01	5.52	1.49
1995	7.14	5.62	1.52
1996	7.31	5.75	1.56
1997	7.46	5.87	1.59
1998	7.60	5.97	1.63
1999	7.74	6.08	1.66
2000	7.94	6.23	1.71
Average Annual Growth Rate 1987-2000	1.9%	1.8%	2.2%
Compound Annual Growth Rate 1987-2000	1.7%	1.6%	1.9%

Source: SAFER Model

(formerly Table 73)

TABLE 42
High Demand Case
COMMERCIAL
WATER HEATING AND COOKING
ENERGY CONSUMPTION
1987-2000
(TBTUs)

	<u>Total</u>	<u>Water Heating</u>	<u>Cooking</u>
1987	6.36	5.03	1.33
1988	6.45	5.08	1.37
1989	6.61	5.21	1.40
1990	6.71	5.29	1.42
1991	6.81	5.37	1.44
1992	6.99	5.51	1.48
1993	7.19	5.67	1.52
1994	7.40	5.83	1.57
1995	7.61	5.99	1.62
1996	7.86	6.18	1.68
1997	8.08	6.35	1.73
1998	8.30	6.52	1.78
1999	8.54	6.70	1.84
2000	8.84	6.93	1.91
Average Annual Growth Rate 1987-2000	3.0%	2.9%	3.4%
Compound Annual Growth Rate 1987-2000	2.5%	2.5%	2.8%

Source: SAFER Model

(formerly Table 74)

TABLE 43
Base Case
COMMERCIAL
ELECTRICITY CONSUMPTION BY END-USE
1987-2000¹
(GWH)

	<u>Total</u>	<u>Space Heating</u>	<u>Water Heat</u>	<u>Cooking</u>	<u>ELECTRICITY END-USES</u>			
					<u>Refrig.</u>	<u>Lighting</u>	<u>AC</u>	<u>Misc.</u>
1987	16,209	1875	454	99	1155	9203	1512	1911
1988	16,772	2031	483	100	1185	9274	1530	2170
1989	17,275	2180	512	101	1217	9347	1543	2376
1990	17,664	2344	541	101	1242	9367	1546	2522
1991	17,806	2432	557	101	1250	9297	1532	2636
1992	17,982	2506	572	101	1259	9267	1523	2754
1993	18,340	2581	591	102	1281	9351	1531	2904
1994	18,733	2654	611	103	1304	9460	1541	3060
1995	19,206	2735	632	105	1331	9615	1555	3233
1996	19,662	2811	653	107	1358	9681	1568	3485
1997	20,145	2898	675	109	1384	9730	1578	3771
1998	20,528	2957	692	110	1403	9741	1579	4045
1999	20,883	3003	708	112	1419	9748	1575	4319
2000	21,492	3079	731	115	1451	9878	1587	4651
Average Annual Growth Rate								
1987-00	2.5%	4.9%	4.7%	1.2%	2.0%	0.56%	0.38%	11.0%
Compound Annual Growth Rate								
1987-00	2.2%	3.8%	3.7%	1.1%	1.8%	0.54%	0.37%	6.8%

1. Utility sales only.

Source: SAFER Model

(formerly Table 74)

TABLE 44
High Demand Case
COMMERCIAL
ELECTRICITY CONSUMPTION BY END-USE
1987-2000¹
(GWH)

	ELECTRICITY END-USES							
	<u>Total</u>	<u>Space Heating</u>	<u>Water Heat</u>	<u>Cooking</u>	<u>Refrig.</u>	<u>Lighting</u>	<u>AC</u>	<u>Misc.</u>
1987	16,209	1875	454	99	1155	9203	1512	1911
1988	16,772	2031	483	100	1185	9274	1530	2170
1989	17,426	2207	518	101	1228	9419	1556	2397
1990	17,979	2402	554	103	1265	9514	1573	2568
1991	18,288	2519	577	103	1285	9522	1572	2710
1992	18,635	2621	599	104	1306	9572	1576	2858
1993	19,176	2725	625	106	1341	9741	1598	3040
1994	19,759	2827	651	108	1377	9940	1622	3234
1995	20,430	2936	680	111	1418	10,188	1651	3445
1996	21,016	3021	706	113	1454	10,312	1673	3736
1997	21,608	3105	731	116	1489	10,411	1692	4064
1998	22,250	3185	756	119	1526	10,542	1712	4411
1999	22,896	3256	781	121	1562	10,680	1728	4768
2000	23,766	3356	812	125	1611	10,922	1757	5182
Average Annual Growth Rate								
1987-00	3.6%	6.1%	6.1%	2.0%	3.0%	1.4%	1.2%	13.2%
Compound Annual Growth Rate								
1987-00	2.9%	4.5%	4.5%	1.8%	2.6%	1.3%	1.2%	7.7%

1. Utility sales only.

Source: SAFER Model

Industrial Sector

(formerly Table 79)

TABLE 45
Base Case
INDUSTRIAL
ENERGY CONSUMPTION
BY FUEL TYPE
1987-2000
(TBTUs)

	<u>Total</u>	<u>Oil</u>	<u>Gas</u>	<u>Coal</u>	<u>Elec.</u> ¹
1987	172.7	108.3	28.1	2.9	33.2
1988	163.3	98.4	27.7	3.0	34.2
1989	165.3	98.8	28.7	3.1	35.0
1990	163.5	95.9	29.4	3.2	34.7
1991	161.7	93.1	30.2	3.2	35.2
1992	163.5	94.2	30.5	3.2	35.6
1993	165.3	94.6	30.9	3.2	36.5
1994	166.1	94.5	31.0	3.3	37.3
1995	167.2	94.5	30.9	3.3	38.4
1996	166.5	93.7	30.8	3.4	38.6
1997	167.2	93.0	31.3	3.4	39.4
1998	170.2	93.8	31.9	3.5	41.0
1999	171.8	93.9	32.4	3.5	42.0
2000	172.6	93.5	32.5	3.6	42.9
Average Annual Growth Rate 1987-2000	0%	-1.1%	1.2%	1.9%	2.2%
Compound Annual Growth Rate 1987-2000	0%	-1.1%	1.1%	1.7%	2.0%

1. Utility sales only.

Source: SAFER Model

TABLE 45a
Base Case
INDUSTRIAL
ENERGY CONSUMPTION
BY FUEL TYPE
1987-2000

	Oil (MBBL)	Gas (BCF)	Coal (M.Ton)	Elec. ¹ (GWH)
1987	18.68	27.47	129.61	9749
1988	16.97	27.04	132.65	10,018
1989	17.04	28.04	137.22	10,173
1990	16.54	28.68	141.76	10,246
1991	16.06	29.50	142.45	10,316
1992	16.24	29.83	143.26	10,431
1993	16.31	30.20	144.66	10,687
1994	16.29	30.29	146.45	10,932
1995	16.29	30.22	148.97	11,254
1996	16.16	30.11	150.31	11,319
1997	16.04	30.59	151.07	11,548
1998	16.18	31.14	153.62	12,014
1999	16.19	31.61	156.83	12,307
2000	16.13	31.72	161.69	12,575
Average Annual Growth Rate				
1987-2000	-1.1%	1.2%	1.9%	2.2%
Compound Annual Growth Rate				
1987-2000	-1.1%	1.1%	1.7%	2.0%

1. Utility sales only.

Source: SAFER Model

(formerly Table 79)

TABLE 46
High Demand Case
INDUSTRIAL
ENERGY CONSUMPTION
BY FUEL TYPE
1987-2000
(TBTUs)

	<u>Total</u>	<u>Oil</u>	<u>Gas</u>	<u>Coal</u>	<u>Elec.</u> ¹
1987	172.7	108.3	28.1	2.9	33.2
1988	163.3	98.4	27.7	3.0	34.2
1989	166.9	99.7	29.0	3.1	35.0
1990	166.5	97.7	29.9	3.2	35.7
1991	166.2	95.6	31.1	3.3	36.3
1992	169.5	97.4	31.7	3.3	37.0
1993	172.8	98.7	32.4	3.4	38.3
1994	175.2	99.4	32.8	3.5	39.5
1995	177.8	100.2	33.0	3.6	41.1
1996	178.6	100.3	33.1	3.6	41.5
1997	180.8	100.5	34.1	3.7	42.6
1998	185.8	102.2	35.1	3.8	44.7
1999	189.4	103.2	36.0	3.9	46.3
2000	192.0	103.7	36.5	4.1	47.7
Average Annual Growth Rate 1987-2000	0.86%	-0.33%	2.3%	3.1%	3.4%
Compound Annual Growth Rate 1987-2000	0.82%	-0.34%	2.0%	2.6%	2.8%

1. Utility sales only.

Source: SAFER Model

TABLE 46a
High Demand Case
INDUSTRIAL
ENERGY CONSUMPTION
BY FUEL TYPE
1987-2000

	Oil (MBBL)	Gas (BCF)	Coal (M.Ton)	Elec. ¹ (GWH)
1987	18.68	27.47	129.61	9749
1988	16.97	27.04	132.65	10,018
1989	17.20	28.31	138.31	10,272
1990	16.84	29.25	144.19	10,453
1991	16.48	30.37	146.25	10,632
1992	16.80	30.97	148.47	10,857
1993	17.02	31.62	151.34	11,228
1994	17.14	31.99	154.70	11,591
1995	17.28	32.18	158.89	12,036
1996	17.29	32.35	161.90	12,179
1997	17.32	33.26	164.35	12,476
1998	17.62	34.24	168.78	13,111
1999	17.79	35.12	174.02	13,581
2000	17.88	35.60	181.17	13,995
Average Annual Growth Rate 1987-2000				
	-0.33%	2.3%	3.1%	3.4%
Compound Annual Growth Rate 1987-2000				
	-0.34%	2.0%	2.6%	2.8%

1. Utility sales only.

Source: SAFER Model

(formerly Table 80)

TABLE 47
Base Case
INDUSTRIAL
DELIVERED FUEL PRICES
1987-2000

	CURRENT DOLLARS				CONSTANT DOLLARS (1975\$)			
	Oil (Gallon)	Gas (MCF)	Coal (S.Ton)	Elec. (KWH)	Oil (Gallon)	Gas (MCF)	Coal (S.Ton)	Elec. (KWH)
1987	0.39	5.58	57.59	0.07	0.19	2.76	28.44	0.033
1988	0.40	4.52	67.22	0.06	0.19	2.14	31.82	0.029
1989	0.45	4.72	70.32	0.06	0.20	2.14	31.95	0.029
1990	0.56	5.25	73.38	0.06	0.24	2.29	32.07	0.028
1991	0.64	5.63	76.11	0.07	0.27	2.40	32.45	0.029
1992	0.69	6.35	79.39	0.07	0.29	2.63	32.83	0.030
1993	0.75	6.68	82.47	0.08	0.30	2.69	33.20	0.031
1994	0.81	7.21	85.85	0.08	0.31	2.82	33.58	0.032
1995	0.88	7.75	89.58	0.09	0.33	2.94	33.96	0.032
1996	0.95	8.13	93.94	0.09	0.35	2.98	34.46	0.033
1997	1.03	8.61	98.88	0.09	0.36	3.04	34.97	0.032
1998	1.12	9.08	104.01	0.10	0.38	3.10	35.47	0.033
1999	1.21	9.58	109.35	0.10	0.40	3.15	35.97	0.033
2000	1.35	10.45	117.89	0.11	0.42	3.23	36.48	0.033

Source: SAFER Model

(formerly Table 80)

TABLE 48
High Demand Case
INDUSTRIAL
DELIVERED FUEL PRICES
1987-2000

	CURRENT DOLLARS				CONSTANT DOLLARS (1975\$)			
	Oil (Gallon)	Gas (MCF)	Coal (S.Ton)	Elec. (KWH)	Oil (Gallon)	Gas (MCF)	Coal (S.Ton)	Elec. (KWH)
1987	0.39	5.58	57.59	0.07	0.19	2.76	28.44	0.033
1988	0.40	4.52	67.22	0.06	0.19	2.14	31.82	0.029
1989	0.45	4.72	70.32	0.06	0.20	2.15	31.95	0.029
1990	0.56	5.20	73.38	0.06	0.24	2.27	32.07	0.028
1991	0.64	5.58	76.11	0.07	0.27	2.38	32.45	0.029
1992	0.69	6.33	79.39	0.07	0.29	2.62	32.83	0.030
1993	0.75	6.67	82.47	0.08	0.30	2.69	33.20	0.031
1994	0.81	7.23	85.85	0.08	0.32	2.83	33.58	0.033
1995	0.88	7.78	89.58	0.09	0.33	2.95	33.96	0.033
1996	0.95	8.20	93.94	0.09	0.35	3.01	34.46	0.034
1997	1.03	8.69	98.88	0.09	0.36	3.07	34.97	0.033
1998	1.12	9.15	104.01	0.10	0.38	3.12	35.47	0.034
1999	1.21	9.68	109.35	0.10	0.40	3.18	35.97	0.034
2000	1.35	10.61	117.89	0.11	0.42	3.28	36.48	0.034

Source: SAFER Model

(formerly Table 81)

TABLE 49
Base Case
INDUSTRIAL
ENERGY USE PER DOLLAR OF OUTPUT
1987 AND 2000
(BTUs/1975\$ OUTPUT)

<u>SIC Code</u>	<u>1987 Energy Intensity</u>	<u>2000 Energy Intensity</u>	<u>Percent Change in Energy Intensity</u>
20	23,627	19,194	- 19
22	29,349	23,160	- 21
23	2360	2104	- 11
24	14,192	11,008	- 22
25	6677	5314	- 20
26	53,619	44,724	- 17
27	2216	1927	- 13
28	43,411	36,906	- 15
29	28,144	22,025	- 22
30	13,579	11,459	- 16
31	17,746	19,349	+ 9
32	19,910	15,994	- 20
33	20,091	16,650	- 17
34	8373	7059	- 16
35 ¹	1522	1473	- 3
36 ¹	4013	3517	- 12
37	7214	6390	- 11
38 ¹	4368	3687	- 16
39 ¹	8241	6594	- 20

1. Category includes a large portion of high technology industries.

Source: SAFER Model

(formerly Table 81)

TABLE 50
High Demand Case
INDUSTRIAL
ENERGY USE PER DOLLAR OF OUTPUT
1987 AND 2000
(BTUs/1975\$ OUTPUT)

<u>SIC Code</u>	<u>1987 Energy Intensity</u>	<u>2000 Energy Intensity</u>	<u>Percent Change in Energy Intensity</u>
20	23,627	19,064	- 19
22	29,349	22,819	- 22
23	2360	2068	- 12
24	14,192	10,902	- 23
25	6677	5275	- 21
26	53,619	41,734	- 22
27	2216	1909	- 14
28	43,411	36,567	- 16
29	28,144	21,836	- 22
30	13,579	11,334	- 17
31	17,746	18,760	+ 6
32	19,910	15,801	- 21
33	20,091	16,512	- 18
34	8373	6980	- 17
35 ¹	1522	1465	- 4
36 ¹	4013	3499	- 13
37	7214	6313	- 12
38 ¹	4368	3665	- 16
39 ¹	8241	6519	- 21

1. Category includes a large portion of high technology industries.

Source: SAFER Model

(formerly Table 82)

TABLE 51
Base Case
INDUSTRIAL
PROCESS HEAT ENERGY CONSUMPTION
BY FUEL TYPE
1987-2000
(TBTUs)

	<u>Total</u>	<u>Oil</u>	<u>Gas</u>	<u>Coal</u>	<u>Elec.</u> ¹
1987	124.57	100.25	22.66	0.98	0.68
1988	114.36	90.52	22.21	0.97	0.66
1989	115.98	91.12	23.20	1.02	0.63
1990	113.81	88.36	23.76	1.07	0.61
1991	111.85	85.66	24.50	1.09	0.59
1992	113.23	86.80	24.78	1.08	0.56
1993	114.00	87.29	25.07	1.08	0.55
1994	113.91	87.20	25.08	1.09	0.53
1995	113.88	87.23	25.04	1.10	0.52
1996	113.05	86.55	24.90	1.10	0.51
1997	113.03	85.96	25.45	1.11	0.50
1998	114.37	86.76	25.96	1.15	0.50
1999	114.89	86.83	26.39	1.18	0.49
2000	114.62	86.47	26.46	1.20	0.49
Average Annual Growth Rate 1987-2000	-0.61%	-1.1%	1.3%	1.7%	-2.1%
Compound Annual Growth Rate 1987-2000	-0.64%	-1.2%	1.2%	1.5%	-2.5%

1. Utility sales only.

Source: SAFER Model

TABLE 51a
Base Case
INDUSTRIAL
PROCESS HEAT ENERGY CONSUMPTION
BY FUEL TYPE
1987-2000

	Oil (MBBL)	Gas (BCF)	Coal (M.Ton)	Elec. ¹ (GWH)
1987	17.21	22.13	40.76	199
1988	15.54	21.69	40.59	192
1989	15.64	22.66	42.48	185
1990	15.17	23.20	44.81	178
1991	14.71	23.93	45.48	173
1992	14.90	24.20	45.21	165
1993	14.99	24.48	45.22	160
1994	14.97	24.50	45.38	156
1995	14.97	24.45	45.73	153
1996	14.86	24.31	45.81	148
1997	14.76	24.85	46.43	147
1998	14.89	25.35	47.96	146
1999	14.91	25.77	49.17	144
2000	14.85	25.84	49.91	143
Average Annual Growth Rate				
1987-2000	-1.1%	1.3%	1.7%	-2.1%
Compound Annual Growth Rate				
1987-2000	-1.2%	1.2%	1.5%	-2.5%

1. Utility sales only.

Source: SAFER Model

(formerly Table 82)

TABLE 52
High Demand Case
INDUSTRIAL
PROCESS HEAT ENERGY CONSUMPTION
BY FUEL TYPE
1987-2000
(TBTUs)

	<u>Total</u>	<u>Oil</u>	<u>Gas</u>	<u>Coal</u>	<u>Elec.</u> ¹
1987	124.57	100.25	22.66	0.98	0.68
1988	114.36	90.52	22.21	0.97	0.66
1989	117.08	91.99	23.42	1.03	0.63
1990	115.95	90.00	24.24	1.09	0.62
1991	114.94	87.99	25.23	1.12	0.60
1992	117.32	89.91	25.72	1.12	0.58
1993	119.11	91.16	26.25	1.13	0.56
1994	120.01	91.82	26.48	1.15	0.55
1995	120.98	92.62	26.65	1.17	0.55
1996	121.11	92.68	26.72	1.18	0.53
1997	122.10	92.83	27.54	1.21	0.53
1998	124.61	94.48	28.33	1.26	0.53
1999	126.23	95.36	29.04	1.31	0.53
2000	127.01	95.78	29.36	1.34	0.52
Average Annual Growth Rate 1987-2000	0.15%	-0.34%	2.3%	2.9%	-1.8%
Compound Annual Growth Rate 1987-2000	0.15%	-0.35%	2.0%	2.4%	-2.1%

1. Utility sales only.

Source: SAFER Model

TABLE 52a
High Demand Case
INDUSTRIAL
PROCESS HEAT ENERGY CONSUMPTION
BY FUEL TYPE
1987-2000

	Oil (MBBL)	Gas (BCF)	Coal (M.Ton)	Elec. ¹ (GWH)
1987	17.21	22.13	40.76	199
1988	15.54	21.69	40.59	192
1989	15.79	22.88	42.78	186
1990	15.45	23.67	45.50	181
1991	15.11	24.64	46.60	176
1992	15.43	25.12	46.74	170
1993	15.65	25.63	47.19	166
1994	15.76	25.86	47.82	162
1995	15.90	26.02	48.67	160
1996	15.91	26.09	49.25	156
1997	15.94	26.89	50.42	154
1998	16.22	27.67	52.62	155
1999	16.37	28.36	54.49	154
2000	16.44	28.67	55.88	154
Average Annual Growth Rate				
1987-2000	-0.34%	2.3%	2.9%	-1.8%
Compound Annual Growth Rate				
1987-2000	-0.35%	2.0%	2.4%	-2.1%

1. Utility sales only.

Source: SAFER Model

(formerly Table 83)

TABLE 53
Base Case
INDUSTRIAL
FEEDSTOCK AND COGENERATION ENERGY CONSUMPTION
BY FUEL TYPE
1987-2000
(TBTUs)

	FEEDSTOCK				COGENERATION ¹			
	<u>Total</u>	<u>Oil</u>	<u>Gas</u>	<u>Coal</u>	<u>Total</u>	<u>Oil</u>	<u>Gas</u>	<u>Coal</u>
1987	18.71	11.64	5.19	1.88	6.06	5.42	0.58	0.058
1988	18.88	11.77	5.15	1.96	5.86	5.19	0.62	0.061
1889	19.06	11.90	5.15	2.01	5.67	4.96	0.64	0.063
1990	19.45	12.19	5.21	2.06	5.46	4.74	0.66	0.064
1991	19.65	12.32	5.28	2.06	5.27	4.53	0.68	0.066
1992	19.95	12.54	5.33	2.08	5.11	4.36	0.69	0.063
1993	20.31	12.79	5.40	2.12	4.98	4.22	0.70	0.061
1994	20.66	13.03	5.47	2.15	4.87	4.10	0.71	0.059
1995	21.04	13.29	5.54	2.20	4.65	3.97	0.62	0.057
1996	21.33	13.55	5.55	2.23	4.57	3.86	0.65	0.056
1997	21.60	13.79	5.57	2.24	4.34	3.72	0.57	0.055
1998	22.03	14.09	5.68	2.26	4.18	3.61	0.51	0.054
1999	22.51	14.43	5.79	2.30	4.04	3.52	0.47	0.054
2000	23.05	14.81	5.86	2.39	3.93	3.43	0.44	0.055
Average Annual Growth Rate								
1987-00	1.8%	2.1%	1.0%	2.0%	-2.7%	-2.8%	-1.8%	-0.40%
Compound Annual Growth Rate								
1987-00	1.6%	1.8%	0.93%	1.8%	-3.4%	-3.5%	-2.0%	-0.41%

1. Cogenerators who do not sell to utilities.

Source: SAFER Model

TABLE 53a
Base Case
INDUSTRIAL
FEEDSTOCK AND COGENERATION ENERGY CONSUMPTION
BY FUEL TYPE
1987-2000

	FEEDSTOCK			COGENERATION ¹		
	Oil (MBBL)	Gas (BCF)	Coal (M.Ton)	Oil (MBBL)	Gas (BCF)	Coal (M.Ton)
1987	2.00	5.07	78.51	0.93	0.57	2.43
1988	2.02	5.03	81.47	0.89	0.61	2.52
1989	2.04	5.03	83.82	0.85	0.63	2.61
1990	2.09	5.09	85.70	0.81	0.65	2.68
1991	2.12	5.16	85.64	0.78	0.67	2.74
1992	2.15	5.21	86.77	0.75	0.67	2.63
1993	2.20	5.28	88.16	0.72	0.68	2.53
1994	2.24	5.34	89.76	0.70	0.70	2.44
1995	2.28	5.41	91.84	0.68	0.61	2.37
1996	2.33	5.42	93.05	0.66	0.64	2.32
1997	2.37	5.44	93.18	0.64	0.56	2.27
1998	2.42	5.55	94.03	0.62	0.50	2.26
1999	2.48	5.64	95.82	0.60	0.46	2.27
2000	2.54	5.72	99.60	0.59	0.43	2.30
Average Annual Growth Rate						
1987-2000	2.1%	1.0%	2.0%	-2.8%	-1.8%	-0.40%
Compound Annual Growth Rate						
1987-2000	1.8%	0.93%	1.8%	-3.5%	-2.0%	-0.41%

1. Cogenerators who do not sell to utilities.

Source: SAFER Model

(formerly Table 83)

TABLE 54
High Demand Case
INDUSTRIAL
FEEDSTOCK AND COGENERATION ENERGY CONSUMPTION
BY FUEL TYPE
1987-2000
(TBTUs)

	FEEDSTOCK				COGENERATION ¹			
	<u>Total</u>	<u>Oil</u>	<u>Gas</u>	<u>Coal</u>	<u>Total</u>	<u>Oil</u>	<u>Gas</u>	<u>Coal</u>
1987	18.71	11.64	5.19	1.88	6.06	5.42	0.58	0.058
1988	18.88	11.77	5.15	1.95	5.86	5.19	0.62	0.061
1889	19.24	12.01	5.20	2.03	5.67	4.96	0.64	0.063
1990	19.83	12.42	5.31	2.09	5.47	4.74	0.66	0.064
1991	20.22	12.67	5.44	2.11	5.28	4.53	0.69	0.066
1992	20.73	13.02	5.55	2.16	5.13	4.37	0.70	0.063
1993	21.30	13.41	5.67	2.22	5.02	4.25	0.71	0.061
1994	21.88	13.80	5.80	2.28	4.94	4.14	0.73	0.059
1995	22.50	14.21	5.93	2.36	4.74	4.04	0.64	0.058
1996	23.03	14.63	5.99	2.41	4.73	3.98	0.69	0.058
1997	23.54	15.02	6.08	2.44	4.69	3.91	0.73	0.058
1998	24.23	15.49	6.25	2.48	4.69	3.86	0.77	0.059
1999	24.99	16.01	6.42	2.55	4.70	3.83	0.81	0.061
2000	25.83	16.59	6.57	2.68	4.69	3.78	0.85	0.063
Average Annual Growth Rate								
1987-2000	2.9%	3.3%	2.0%	3.3%	-1.7%	-2.3%	3.6%	0.66%
Compound Annual Growth Rate								
1987-2000	2.5%	2.7%	1.2%	2.7%	-2.0%	-4.1%	2.9%	0.26%

1. Cogenerators who do not sell to utilities.

Source: SAFER Model

TABLE 54a
High Demand Case
INDUSTRIAL
FEEDSTOCK AND COGENERATION ENERGY CONSUMPTION
BY FUEL TYPE
1987-2000

	FEEDSTOCK			COGENERATION ¹		
	Oil (MBBL)	Gas (BCF)	Coal (M.Ton)	Oil (MBBL)	Gas (BCF)	Coal (M.Ton)
1987	2.00	5.07	78.51	0.93	0.57	2.43
1988	2.02	5.03	81.47	0.89	0.61	2.52
1989	2.08	5.10	84.58	0.85	0.63	2.61
1990	2.13	5.20	87.08	0.81	0.65	2.68
1991	2.18	5.33	87.91	0.78	0.67	2.74
1992	2.23	5.44	90.00	0.75	0.68	2.63
1993	2.30	5.56	92.50	0.73	0.70	2.53
1994	2.37	5.69	95.00	0.71	0.72	2.46
1995	2.44	5.81	98.33	0.69	0.63	2.41
1996	2.51	5.87	100.41	0.68	0.67	2.40
1997	2.78	5.96	101.67	0.67	0.71	2.41
1998	2.66	6.13	103.33	0.66	0.75	2.45
1999	2.75	6.30	106.25	0.66	0.79	2.53
2000	2.85	6.44	111.66	0.65	0.83	2.61
Average Annual Growth Rate						
1987-2000	3.3%	2.0%	3.3%	-2.3%	3.6%	0.66%
Compound Annual Growth Rate						
1987-2000	2.7%	1.2%	2.7%	-4.1%	2.9%	0.26%

1. Cogenerators who do not sell to utilities.

Source: SAFER Model

(formerly Table 84)

TABLE 55
Base Case
INDUSTRIAL
ELECTRICITY CONSUMPTION
BY END-USE
1987-2000¹
(GWH)

	<u>Total</u>	<u>Process Heat</u>	<u>Lighting</u>	<u>AC</u>	<u>Misc.</u>
1987	10,259	199	214	270	9577
1988	10,515	192	218	271	9834
1989	10,658	185	222	269	9981
1990	10,717	178	219	265	10,054
1991	10,775	173	210	260	10,132
1992	10,878	165	208	256	10,248
1993	11,125	160	208	255	10,502
1994	11,362	156	207	254	10,745
1995	11,665	153	208	254	11,051
1996	11,725	148	210	258	11,109
1997	11,936	147	216	264	11,310
1998	12,388	146	217	260	11,765
1999	12,670	144	216	255	12,055
2000	12,929	143	216	254	12,316
Average Annual Growth Rate 1987-2000	2.0%	-2.2%	0.1%	-0.46%	2.2%
Compound Annual Growth Rate 1987-2000	1.8%	-2.5%	0.07%	-0.47%	1.9%

1. Utility sales only.

Source: SAFER Model

(formerly Table 84)

TABLE 56
High Demand Case
INDUSTRIAL
ELECTRICITY CONSUMPTION
BY END-USE
1987-2000¹
(GWH)

	<u>Total</u>	<u>Process Heat</u>	<u>Lighting</u>	<u>AC</u>	<u>Misc.</u>
1987	10,259	199	214	270	9577
1988	10,515	192	218	271	9834
1989	10,757	186	224	271	10,076
1990	10,925	181	224	269	10,251
1991	11,092	176	217	267	10,432
1992	11,305	170	216	265	10,654
1993	11,669	166	218	266	11,019
1994	12,027	162	220	267	11,378
1995	12,456	160	222	269	11,805
1996	12,599	156	227	274	11,943
1997	12,895	154	234	282	12,226
1998	13,531	155	238	281	12,858
1999	14,004	154	240	278	13,331
2000	14,418	154	242	279	13,743
Average Annual Growth Rate 1987-2000	3.1%	-1.7%	1.0%	0.26%	3.3%
Compound Annual Growth Rate 1987-2000	2.6%	-2.0%	1.0%	0.25%	2.8%

1. Utility sales only.

Source: SAFER Model

Transportation

(formerly Table 86)

TABLE 57
Base Case
TRANSPORTATION
ENERGY CONSUMPTION
BY END-USE
1987-2000
(TBTUs)

	<u>Total</u>	<u>Motor Vehicles¹</u>	<u>Bus</u>	<u>Train</u>	<u>Plane</u>	<u>Marine</u>
1987	364.62	309.49	4.10	1.27	38.02	11.74
1988	375.41	316.99	4.44	1.30	40.59	12.09
1989	382.76	324.72	4.45	1.24	40.62	11.72
1990	388.14	329.21	4.56	1.25	41.54	11.58
1991	392.92	332.52	4.69	1.24	42.75	11.72
1992	402.21	339.83	4.87	1.25	44.22	12.05
1993	410.36	346.49	5.01	1.27	45.26	12.32
1994	416.58	351.29	5.13	1.30	46.24	12.62
1995	425.68	358.86	5.29	1.34	47.24	12.95
1996	434.19	365.80	5.45	1.37	48.54	13.03
1997	440.77	371.02	5.58	1.41	49.55	13.20
1998	452.34	380.75	5.75	1.45	50.58	13.81
1999	459.88	386.44	5.86	1.49	51.77	14.32
2000	469.94	394.50	6.01	1.54	53.22	14.67
Average Annual						
Growth Rate						
1987-00	2.2%	2.1%	3.6%	1.6%	3.1%	1.9%
Compound Annual						
Growth Rate						
1987-00	2.0%	1.9%	2.9%	1.5%	2.6%	1.7%

1. Excludes buses.

Source: SAFER Model

(formerly Table 86)

TABLE 58
High Demand Case
TRANSPORTATION
ENERGY CONSUMPTION
BY END-USE
1987-2000
(TBTUs)

	<u>Total</u>	<u>Motor Vehicles</u> ¹	<u>Bus</u>	<u>Train</u>	<u>Plane</u>	<u>Marine</u>
1987	364.62	309.49	4.10	1.27	38.02	11.74
1988	375.41	316.99	4.44	1.30	40.59	12.09
1989	386.52	327.92	4.48	1.25	41.04	11.83
1990	395.77	335.68	4.61	1.27	42.39	11.81
1991	404.43	342.27	4.78	1.27	44.05	12.07
1992	417.86	353.06	4.99	1.29	45.99	12.52
1993	430.27	363.32	5.17	1.32	47.52	12.94
1994	440.85	371.78	5.34	1.36	49.01	13.37
1995	454.63	383.29	5.54	1.41	50.53	13.85
1996	467.97	394.30	5.74	1.45	52.40	14.07
1997	479.44	403.64	5.93	1.50	53.99	14.39
1998	496.52	418.00	6.15	1.56	55.62	15.19
1999	509.41	428.14	6.32	1.62	57.45	15.90
2000	525.28	441.05	6.53	1.68	59.60	16.43
Average Annual Growth Rate						
1987-00	3.4%	3.3%	4.6%	2.5%	4.4%	3.1%
Compound Annual Growth Rate						
1987-00	2.8%	2.7%	3.6%	2.2%	3.5%	2.6%

1. Excludes buses.

Source: SAFER Model

Electric Utility

(formerly Table 54)

TABLE 59
Base Case
MASSACHUSETTS
TOTAL ELECTRICITY CONSUMPTION
AND PEAK DEMAND
1987-2000

	ELECTRICITY CONSUMED			Peak Demand (MW)
	Utility Sales	(GWH) Self-Generation	Total	
1987	42,749	107	42,856	8201
1988	44,421	104	44,505	8580
1989	45,296	100	45,396	8706
1990	46,070	96	46,166	8785
1991	46,242	92	46,334	8821
1992	46,680	89	46,769	8881
1993	47,654	88	47,742	9032
1994	48,584	86	48,670	9171
1995	49,915	83	49,998	9429
1996	50,856	82	50,938	9605
1997	51,985	82	52,067	9817
1998	53,306	81	53,387	9987
1999	54,041	81	54,122	10,030
2000	55,354	80	55,334	10,196
Average Annual Growth Rate 1987-2000	2.9%	-1.9%	2.2%	1.9%
Compound Annual Growth Rate 1987-2000	2.0%	-2.2%	2.0%	1.7%

Source: SAFER Model

(formerly Table 54)

TABLE 60
High Demand Case
MASSACHUSETTS
TOTAL ELECTRICITY CONSUMPTION
AND PEAK DEMAND
1987-2000

	ELECTRICITY CONSUMED (GWH)			Peak Demand (MW)
	Utility Sales	Self-Generation	Total	
1987	42,749	107	42,856	8201
1988	44,421	104	44,525	8580
1989	45,687	103	45,790	8781
1990	46,882	97	46,979	8961
1991	47,475	93	47,568	9086
1992	48,340	89	48,429	9234
1993	49,766	89	49,855	9476
1994	51,165	87	51,252	9709
1995	52,993	85	53,078	10,065
1996	54,251	85	54,336	10,298
1997	55,645	87	55,732	10,552
1998	57,631	90	57,721	10,843
1999	59,069	92	59,161	11,017
2000	60,998	92	61,090	11,300
Average Annual Growth Rate 1987-2000	3.3%	-1.1%	3.3%	2.9%
Compound Annual Growth Rate 1987-2000	2.7%	-1.1%	2.7%	1.9%

Source: SAFER Model

TABLE 61
Base and High Demand Cases
MASSACHUSETTS
ELECTRICITY PEAK DEMAND
WITHOUT DEMAND-SIDE MANAGEMENT
1987-2000

	Base Case Peak without DSM (MW)	High Case Peak without DSM (MW)	DSM Impacts (MW)	Energy Reduction (MWH)
1987	8362	8362	161	201,480
1988	8741	8741	161	314,702
1989	8939	9014	233	588,058
1990	9178	9354	393	808,198
1991	9268	9533	447	1,050,793
1992	9391	9744	510	1,220,168
1993	9606	10,050	574	1,402,965
1994	9798	10,336	627	1,631,031
1995	10,075	10,711	646	1,662,177
1996	10,277	10,970	672	1,739,999
1997	10,507	11,242	690	1,783,627
1998	10,760	11,616	773	1,826,658
1999	10,880	11,867	850	2,345,536
2000	11,136	12,240	940	2,493,450
Average Annual Growth Rate				
1987-2000	2.6%	3.6%	37.2%	87.5%
Compound Annual Growth Rate				
1987-2000	2.2%	2.9%	13.6%	19.4%

Sources: SAFER Model; NEPOOL report, Demand-Side Management, April 1, 1988.

(formerly Table 68)

TABLE 62
Base Case
MASSACHUSETTS
PEAK ELECTRICITY DEMAND
BY SECTOR
1987-2000
(MW)

	<u>Total</u>	<u>Residential</u>	<u>Commercial</u>	<u>Industrial</u>	<u>Other</u> ¹
1987	8201	3102	3258	1423	418
1988	8580	3288	3419	1455	418
1989	8706	3407	3441	1445	413
1990	8785	3471	3466	1438	410
1991	8821	3514	3476	1423	409
1992	8881	3542	3498	1428	413
1993	9032	3602	3551	1455	423
1994	9171	3661	3593	1486	431
1995	9429	3760	3688	1540	442
1996	9605	3837	3742	1580	445
1997	9817	3934	3824	1609	451
1998	9987	4009	3892	1633	453
1999	10,030	4032	3894	1657	447
2000	10,196	4079	3959	1709	449
Average Annual Growth Rate 1987-2000	1.9%	2.4%	1.7%	1.5%	0.57%
Compound Annual Growth Rate 1987-2000	1.7%	2.1%	1.5%	1.4%	0.55%

1. Includes streetlighting and miscellaneous loads, sales to customer outside Massachusetts, and transmission and distribution losses.

Source: SAFER Model

(formerly Table 68)

TABLE 63
High Demand Case
MASSACHUSETTS
PEAK ELECTRICITY DEMAND
BY SECTOR
1987-2000
(MW)

	<u>Total</u>	<u>Residential</u>	<u>Commercial</u>	<u>Industrial</u>	<u>Other</u> ¹
1987	8201	3102	3258	1423	418
1988	8580	3288	3419	1455	418
1989	8781	3436	3470	1458	417
1990	8961	3542	3536	1467	416
1991	9086	3623	3580	1467	415
1992	9234	3688	3637	1489	419
1993	9476	3787	3727	1533	430
1994	9709	3883	3807	1582	437
1995	10,065	4021	3941	1655	447
1996	10,298	4121	4019	1707	449
1997	10,552	4235	4118	1745	454
1998	10,843	4358	4236	1791	459
1999	11,017	4434	4288	1840	456
2000	11,300	4526	4400	1916	457
Average Annual Growth Rate 1987-2000	2.9%	3.5%	2.7%	2.7%	0.70%
Compound Annual Growth Rate 1987-2000	2.5%	2.9%	2.3%	2.3%	0.69%

1. Includes streetlighting and miscellaneous loads, sales to customers outside Massachusetts, and transmission and distribution losses.

Source: SAFER Model

(formerly Table 88)

TABLE 64
Base Case
ELECTRIC UTILITY
FOSSIL FUEL CONSUMPTION
1987-2000
(TBTUs)

	<u>Total</u>	<u>Oil</u>	<u>Gas</u>	<u>Coal</u>
1987	318.4	150.4	38.0	130.0
1988	306.9	144.6	32.3	130.0
1989	285.0	123.0	33.1	128.9
1990	277.5	106.6	42.3	128.6
1991	292.5	88.6	79.6	124.2
1992	301.6	77.6	99.3	124.7
1993	308.7	73.1	110.9	124.7
1994	316.0	74.4	109.6	132.0
1995	336.4	87.5	113.5	135.4
1996	344.2	90.3	116.3	137.7
1997	353.9	93.8	119.8	140.2
1998	364.8	97.3	124.5	143.0
1999	367.1	97.1	126.2	143.8
2000	376.8	100.9	130.0	145.9
Average Annual Growth Rate 1987-2000	1.4%	-2.5%	18.6%	0.94%
Compound Annual Growth Rate 1987-2000	1.3%	-3.1%	9.5%	0.89%

Source: SAFER Model

(formerly Table 88)

TABLE 65
High Demand Case
ELECTRIC UTILITY
FOSSIL FUEL CONSUMPTION
1987-2000
(TBTUs)

	<u>Total</u>	<u>Oil</u>	<u>Gas</u>	<u>Coal</u>
1987	318.4	150.4	38.0	130.0
1988	306.9	144.6	32.3	130.0
1989	288.0	125.2	33.7	129.1
1990	283.4	110.6	43.7	129.0
1991	302.3	93.8	82.3	126.2
1992	315.6	83.6	103.2	128.8
1993	326.5	80.3	116.6	129.7
1994	337.8	83.3	116.2	138.2
1995	363.7	99.8	121.9	142.0
1996	373.9	104.0	125.7	144.2
1997	385.3	108.7	130.2	146.4
1998	400.9	114.9	137.2	148.8
1999	409.1	117.7	141.5	149.9
2000	423.8	124.7	147.9	151.2
Average Annual Growth Rate 1987-2000	2.5%	-1.3%	22.2%	1.3%
Compound Annual Growth Rate 1987-2000	2.2%	-1.4%	10.3%	1.2%

Source: SAFER Model

(formerly Table 89)

TABLE 66
Base Case
MASSACHUSETTS FUTURE ELECTRICITY SUPPLIES BY TYPE
1987-2000¹
(MW)

	Total	Utility Generating Capacity ²	Firm Purchases	Small Power Purchases ³	Interruptible Load	Pumped Storage ⁴	New Capacity Needs
1987	10,917	9050	942	302	33	590	0
1988	11,317	9050	1307	351	19	590	0
1989	11,279	9045	1152	473	19	590	0
1990	12,445	9045	1678	1113	19	590	0
1991	12,631	9069	1311	1642	19	590	0
1992	12,478	9069	1048	1752	19	590	0
1993	12,633	9069	1007	1947	20	590	0
1994	12,563	9047	957	1947	22	590	0
1995	12,649	9031	959	1947	22	590	100
1996	12,617	8999	959	1947	22	590	0
1997	12,617	8999	959	1947	22	590	0
1998	12,613	8995	959	1947	25	590	0
1999	12,613	8995	959	1947	23	590	0
2000	12,713	8995	959	1947	23	590	100

1. Based on NEPOOL, utility and small power survey data available August 1988.

2. Capacity adjusted for seasonal availability.

3. Includes independent power projects (e.g., NEA Bellingham).

4. Net effective generating capacity.

Source: SAFER Model

(formerly Table 89)

TABLE 67
High Demand Case
MASSACHUSETTS FUTURE ELECTRICITY SUPPLIES BY TYPE
1987-2000¹
(MW)

	Total	Utility Generating Capacity ²	Firm Purchases	Small Power Purchases ³	Interruptible Load	Pumped Storage ⁴	New Capacity Needs
1987	10,917	9050	942	302	33	590	0
1988	11,317	9050	1307	351	19	590	0
1989	11,279	9045	1152	473	19	590	0
1990	12,445	9045	1678	1113	19	590	0
1991	12,631	9069	1311	1642	19	590	0
1992	12,478	9069	1048	1752	19	590	0
1993	12,633	9069	1007	1947	20	590	0
1994	12,563	9047	957	1947	22	590	0
1995	12,649	9031	959	1947	22	590	100
1996	12,617	8999	959	1947	22	590	0
1997	12,617	8999	959	1947	22	590	0
1998	12,913	8995	959	1949	22	590	300
1999	13,213	8995	959	1947	23	590	300
2000	13,713	8995	959	1947	23	590	500

1. Based on NEPOOL, utility and small power survey data available August 1988.

2. Capacity adjusted for seasonal availability.

3. Includes independent power projects (e.g., NEA Bellingham).

4. Net effective generating capacity.

Source: SAFER Model

Gas Utility

TABLE 68
Base Case
GAS UTILITY
PEAK, AVERAGE, AND MINIMUM LOAD
AND TOTAL SALES
1987-2000
(MMCF)

	<u>Total Sales</u>	<u>Peak Load</u>	<u>Average Load</u>	<u>Minimum Load</u>
1987	236,299	1235	642	267
1988	241,743	1325	657	257
1989	248,209	1365	675	264
1990	262,009	1408	712	292
1991	303,688	1509	825	399
1992	328,346	1582	892	457
1993	347,030	1641	943	494
1994	350,881	1678	954	493
1995	360,660	1718	980	507
1996	370,541	1769	1007	520
1997	380,204	1808	1033	534
1998	392,613	1860	1067	553
1999	399,424	1892	1086	561
2000	410,019	1938	1114	576
Average Annual Growth Rate				
1987-2000	5.6%	4.4%	5.6%	8.9%
Compound Annual Growth Rate				
1987-2000	4.2%	3.5%	4.2%	5.9%

Source: SAFER model

TABLE 69
High Demand Case
GAS UTILITY
PEAK, AVERAGE, AND MINIMUM LOAD
AND TOTAL SALES
1987-2000
(MMCF)

	<u>Total Sales</u>	<u>Peak Load</u>	<u>Average Load</u>	<u>Minimum Load</u>
1987	236,299	1235	642	267
1988	241,743	1325	657	257
1989	251,041	1380	682	267
1990	268,264	1439	729	300
1991	313,634	1556	852	412
1992	341,459	1641	928	475
1993	364,397	1716	990	518
1994	371,824	1768	1011	523
1995	385,841	1825	1049	544
1996	399,754	1894	1086	561
1997	413,600	1954	1124	581
1998	431,885	2027	1174	605
1999	444,527	2079	1208	617
2000	461,075	2146	1253	633
Average Annual Growth Rate				
1987-2000	7.3%	5.7%	7.3%	10.5%
Compound Annual Growth Rate				
1987-2000	5.1%	4.3%	5.1%	6.6%

Source: SAFER model

TABLE 70
Base Case
GAS UTILITY
FIRM SALES BY CLASS OF SERVICE
1987-2000
(MMCF)

	<u>Residential</u>	<u>Commercial</u>	<u>Industrial</u>	<u>Miscellaneous</u>
1987	106,145	55,822	14,994	2246
1988	115,497	58,484	15,469	2246
1989	118,643	59,910	15,979	2246
1990	121,738	60,656	16,465	2246
1991	123,670	61,445	16,994	2246
1992	126,658	62,637	17,169	2246
1993	131,381	64,315	17,444	2246
1994	134,993	65,875	17,700	2246
1995	139,635	67,029	17,793	2246
1996	144,985	68,839	17,922	2246
1997	149,154	70,213	18,077	2246
1998	154,914	71,463	18,507	2246
1999	157,971	72,939	18,876	2246
2000	162,845	74,652	19,129	2246
Average Annual Growth Rate 1987-2000	4.1%	2.6%	2.1%	0%
Compound Annual Growth Rate 1987-2000	3.3%	2.2%	1.9%	0%

Source: SAFER model

TABLE 71
High Demand Case
GAS UTILITY
FIRM SALES BY CLASS OF SERVICE
1987-2000
(MMCF)

	<u>Residential</u>	<u>Commercial</u>	<u>Industrial</u>	<u>Miscellaneous</u>
1987	106,145	55,822	14,994	2246
1988	115,497	58,484	15,469	2246
1989	119,943	60,553	16,131	2246
1990	124,536	62,028	16,808	2246
1991	127,846	63,488	17,529	2246
1992	131,925	65,217	17,854	2246
1993	138,074	67,578	18,305	2246
1994	143,173	69,851	18,738	2246
1995	149,344	71,682	18,995	2246
1996	156,491	74,295	19,303	2246
1997	162,519	76,501	19,754	2246
1998	170,404	78,619	20,498	2246
1999	175,339	80,965	21,165	2246
2000	182,195	83,540	21,685	2246
Average Annual Growth Rate 1987-2000	5.5%	3.8%	3.4%	0%
Compound Annual Growth Rate 1987-2000	4.2%	3.1%	2.8%	0%

Source: SAFER model

TABLE 72
Base Case
GAS UTILITY
INTERRUPTIBLE SALES BY CLASS OF SERVICE
1987-2000
(MMCF)

	<u>Commercial</u>	<u>Industrial</u>	<u>Utility</u>
1987	4517	13,728	38,848
1988	4260	12,803	31,714
1989	4277	13,341	31,222
1990	4158	13,520	36,164
1991	4172	13,850	45,039
1992	4209	14,023	48,976
1993	4249	14,130	55,857
1994	4226	13,967	54,214
1995	4239	13,802	58,256
1996	4274	13,559	61,056
1997	4271	13,910	64,674
1998	4314	14,049	69,459
1999	4340	14,168	71,224
2000	4416	14,030	75,041
Average Annual Growth Rate 1987-2000	-0.17%	0.17%	7.2%
Compound Annual Growth Rate 1987-2000	-0.17%	0.16%	5.1%

Source: SAFER model

TABLE 73
High Demand Case
GAS UTILITY
INTERRUPTIBLE SALES BY CLASS OF SERVICE
1987-2000
(MMCF)

	<u>Commercial</u>	<u>Industrial</u>	<u>Utility</u>
1987	4517	13,728	38,848
1988	4260	12,803	31,714
1989	4310	13,467	31,801
1990	4223	13,770	37,591
1991	4271	14,224	47,758
1992	4345	14,522	52,922
1993	4424	14,754	61,609
1994	4439	14,705	61,012
1995	4493	14,654	66,767
1996	4572	14,516	70,670
1997	4612	15,019	75,288
1998	4704	15,297	82,456
1999	4778	15,558	86,816
2000	4907	15,539	93,302
Average Annual Growth Rate 1987-2000	0.66%	1.0%	10.8%
Compound Annual Growth Rate 1987-2000	0.63%	0.95%	6.7%

Source: SAFER model

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